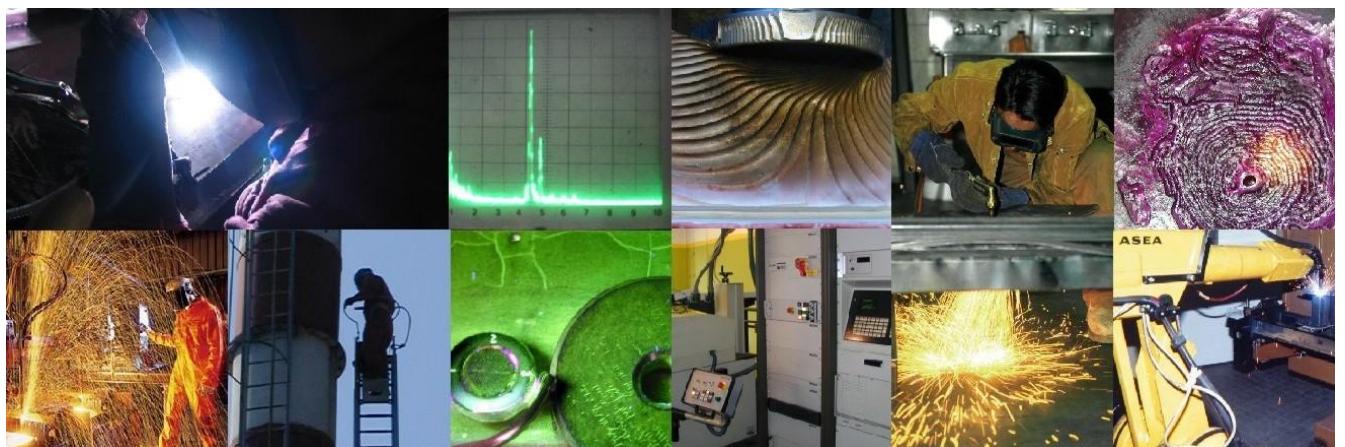


# Done IT



***Connecting technology and people***

**LLP KA3 - ICT project 2011-13**

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## Evaluation results

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**Circulation:** Public

**Partners:** Magyar Hegesztéstechnikai és Anyagvizsgálati Egyesület (MHtE), Budapest, Hungary; Institut za Varilstvo (IzV), Ljubljana, Slovenia; Centrum for Flexible Learning, Söderhamn, Sweden; HiST Contract Research, Trondheim, Norway; University of Huddersfield, Huddersfield, UK; Petru Maior University of Targu-Mures, Targu Mures, Romania

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# 1 Executive Summary

## **Background**

Generally, the goal of assessments is to improve students learning, though the final output of the evaluation process is a grade that "measure" student's individual learning and performance. Almost every student will once have experienced during their studies that grades are not always reliable measures of learning, even though attendance, participation and efforts are measured. As a consequence, assessments lead to exacerbate learning processes!

In class communication, interaction and collaboration processes that may enhance effective Peer Learning processes, were students learn from their peers, are difficult to measure by use of existing ICT technologies.

From a practical point of view, it is today challenging in most subjects to consider using assessment for learning as a training method. The reason is that students are unable to immediately verify their learning during tests/exams as feedback is published after several days or even weeks. This is in particular the case for learning skills in vocational education and training, and in higher education in Europe. Usually educational institutions don't have access to a high number of computer science labs where it is possible to run digital multiple-choice tests for all campus students. On the other hand, within a few years a lot of students will have access to cheap mobile phones with high resolution pressure sensitive screens.

It is the ambition of the KA 3 ICT Done-IT pilot project to develop a new evaluation model where the (formative) assessment results from several tests and/or the final exam (summative assessment) in a class are turned into an active, creative and collaborative peer learning process by the use of immediate feedback:

- Verification feedback led by a teacher: why is this particular answer correct and why are the others incorrect.
- An elaborate feedback discussion run by students: the answers are displayed but they don't know which the (in) correct ones are.
- An elaborative feedback discussion led by one student: the deviation from the correct answer without addressing why this is correct and the other ones are incorrect.

The Done-IT project has developed and constructed the **Peer Learning Assessment Services (PeLe)** in order to test and validate the new peer learning evaluation model. These services may be accessed from students own Smartphone's, Pad's, Pod's, PC or Mac.

With PeLe teachers and educational organizations may start using a new evaluation model where the (formative) assessment results from several tests and/or the final exam (summative assessment) in a class are turned into an active, creative and collaborative peer learning process. **The teacher uses PeLe to move his or her resources towards the problematic areas, where many students failed and where the yield for learning is high.**

## ***Developed training method***

The Peer Learning Assessment Service (Pele) system for Smartphone's, Pad's, Pod's, Pc and Mac gives the teacher a new tool, allowing him/her to either give verification or elaborative feedback to individual students or groups of students immediately after a test. This is a key factor helping students to improve their skills by the use of active collaborative supported learning. Students will, when they still remember the questions in the test, learn why the correct answer is correct and why the other ones are incorrect. Thus, mobile technology provides new evaluation and testing criteria within education and training.

### **The assessment phases include several stages:**

1. During the assessment the students are handed the test on paper, and respond to it using a web-enable device like a Smartphone, iPod and pad. The teacher may monitor the activity in real time as the students respond.

The monitoring interface displays the student responses in real time, including individual responses on each question, and accumulated responses and trends in the form of histograms. This gives the teacher an early warning about questions that caused problems and need more work. Monitoring also reassures the teacher that the technology is working properly.

2. After the test is submitted, the students get a short break. This will be the result consideration phase. Once the students have completed the assessment, the teacher uses this phase to obtain a complete overview of the results submitted by the students.

The interface provides an at-a-glance overview of how the students answered the assessment, and in particular identifies the problematic questions. It also helps identify students that have more problems than others and who need special attention. This interface is designed to as a teacher tool which ensures that the post-assessment activities can be done as effectively as possible. A question with a high proportion of incorrect answers is highlighted, so that the teacher may spend more time on it when reviewing the test. The teacher uses this interface to select a subset of the questions (the problematic ones) and prepares for the most important part, from a learning perspective: the post-assessment activities.

3. In the post-assessment phase, a subset of the questions has been highlighted, and the teacher may start providing verification or elaborative feedback in order to enhance new learning activities. Thus, the assessment system is used to reveal the test results and promote and enhance the peer-learning process. The teacher can invite and engage the students to take part in a process where they learn from the problems they have just spent time trying to solve.

## ***Certification processes***

It is the goal to design the PeLe system in such way that it may be used to grade assessments carried out by certification bodies. Certification bodies require a test system where the questions are stored in a question data bank, from which they're retrieved when starting a test. There are no post-assessment activities. The certification bodies can be totally disconnected from the teaching process as they test the knowledge after a teaching period has been completed. The requirements here are different from the teaching approach where learning is in focus.

It is important that during the learning process, teachers familiarize students with the system, show and explain its operations, its advantages and features. It is good that teachers during a teaching period conduct in the classroom at least two such tests before the final test, which is actually assessed and conducted by certification body. Therefore students lose the fear of something new. At the same time they test their current knowledge and progress in knowledge.

Implementation of the examination at the final test is conducted according the following phases: firstly students enter the room, use an electronic device (use their own smart phones or devices provided by the certification body) and respond to questions on a printout. Questions and alternatives are randomized and gathered automatically and the results are given without comments or elaborations after the test. However the requirements for such assessments are much bigger. The sets of questions may be large and the question sets often relate to different sections.

## ***Evaluation***

Evaluation of the project will take place during the project life time and according to an evaluation plan.

A standardized set of evaluation documents have been developed in order to ensure that the evaluation follows the same pattern and that it becomes unified in form and presentation.

In the project harmonized and special questionnaires - for needs of development process were used.

A set of evaluation forms, questionnaires, and results of them are presented this paper.

## 2 Harmonized project questions - CHECKLIST for internal partner Evaluation

Version: 1.0		PROJECT		Date: 2012.05.15
Item	Topic	Status	Date	Signature
1	Check that all the partners understand the aim of WP1			
2	Check that all the partners understand the aim of WP2			
3	Check that all the partners understand the aim of WP3			
4	Check that all the partners understand the aim of WP4			
5	Check that all the partners understand the aim of WP5			
6	Check that all the partners understand the aim of WP6			
7	Check that all the partners understand the aim of WP7			
8	Confirm that the partners understand and are fully conversant with tools and technology and the training requirements of the end-users			
9	Confirm and check the deadlines with the partners and adjust if necessary			
10	Check that there is a degree of flexibility in the time allowed to produce the work			
11	Confirm with the partners that the tasks set are appropriate for them and make changes to the individual workloads if necessary			
12	Confirm that all partners are undertaking the work required by this WP and that it conforms to the needs of the WP			
13	Confirm that the evaluation strategy is adequate for the WG objectives			
14	Conform that the internal and external evaluation groups are correctly structured			
15	Check that the main outcome, the concept definition of the project fits to the aims of the WP's			
16	Check that outcome and results are well documented			
17	Confirm accuracy of information and sources as well as possible			
18	Install a feedback process to improve the quality of outcome and results			
19	Check that interim and final reports are correctly structured			

**Evaluation for end users of Peer Learning Assessment Service (PeLe) system.**

**1. Gender**

- Male
- Female

**2. Age**

**3. My first impression of the Peer Learning Assessment Service (PeLe) system is;**

- Excellent
- Very good
- Satisfactory
- Not very good
- Bad

**4. Its fun to be at lectures where the Learning Assessment Service (PeLe) system is used?**

- I totally agree
- I agree
- Neutral
- I slightly disagree
- Sorry I fell asleep...

**5. What voting device did you use?**

- I Pod provided by teacher
- Private i Pod
- Private cell phone
- Pc
- Other device

**6. It was easy to use the voting device**

- I totally agree
- I agree
- Neutral
- I slightly disagree
- I totally disagree

**7. How was the introduction of the Learning Assessment Service (PeLe) system, before it was used in the classroom?**

- Excellent
- Very good
- Satisfactory
- Slightly insufficient
- Insufficient

**8. How would you grade the questions used with the Learning Assessment Service (PeLe) system?**

- Way to difficult
- Difficult
- Satisfactory
- Easy
- Way to easy

**9. To what extent do you think the system, as it has been used, integrate as a natural part of the training and certification session?**

- Excellent
- Very good
- Satisfactory
- Not very good
- Bad

**10. Does the teacher/examiner seem comfortable using the system?**

- Very comfortable
- Slightly comfortable
- Comfortable
- Slightly uncomfortable
- Very uncomfortable

**11. To what extent do you feel that the Learning Assessment Service (PeLe) system engage and activate you during training and after exams?**

- Very large
- Large
- Neutral
- Small
- Poor

**12. The Learning Assessment Service (PeLe) system collects anonymous responses, how important is that for your participation during training time?**

- very large
- large
- neutral
- small
- poor

**14. To what extent do you think the Learning Assessment Service (PeLe) system can aid your learning of the course curriculum?**

- Very large
- Large
- Neutral
- Small
- Poor

**15. How would you grade the importance of the examiner spending time on explaining whether the alternatives are right or wrong, and why?**

- Extremely important
- Important
- Neutral
- Not that important
- Waste of time

**16. The use of Learning Assessment Service (PeLe) system compromises the ordinary training time?**

- Very large
- Large
- Neutral
- Small
- Poor

**17. Learning Assessment Service (PeLe) system should be used in all classes/lectures and exams.**

- I totally agree
- I agree
- Neutral
- I slightly disagree
- I totally disagree

**18. Last but not least; do you have any tips/concrete advice for further use and development of the Learning Assessment Service (PeLe) system?**

Some partners have used also their own questionnaires during the development process mainly to get feed back from users. First two questionnaires were developed to define user needs.

## **Project Questions - Norway**

### **2.1.1 Test 1**

- First impression:
  - o Test start – the first page they see – Home Page?
- Navigating:
  - o Arrows
  - o Slide
  - o Number sequence
- Can only answer on the right side
- Did they notice/use/understand:
  - o Field (star)?
  - o Recycle bin?
  - o Magnifier (where they find the unanswered questions)?
  - o the boxes – red/green?
- Higher colour contrasts
- Delivering the test: submit;
  - o Overview?
  - o Submit?
    - Type yes
- Stressed while doing a test using an iPod?
  - o Standby
  - o Closing the programme
- Security meaning
  - o Training
  - o Icon description on paper
- Cheating; has to be a closed system
- 

### **2.1.2 Test 2**

#### **Introductory questions:**

- What are your first impressions of the system now?
- What changes did you notice?
  - o The general impression?
    - Positive
    - Negative
- What could be made different/ what is missing?

- Security?

## **List of changes – ranked (on Pascal's insistence):**

### **1. Submit-hint-bar**

- Once you've answered 6 of 6 question, a line pops up having the message "ready to submit, go to home for submit"
- What do they think of this function?
- Is it clear enough what they *can* do now, and *where* they have to go to do it?

### **2. Color contrasts: blue/red**

- Difference between the answered and the non-answered questions (blue box = non-answered, a red frame around the box = answered).
- Strong/clear contrasts?
- Colour usage?

### **3. Progress bar**

- There is a (green) bar being filled after answering each question (if there are three alternatives to choose, the bar is not filled until 3 alternatives are chosen).
- There is the same bar on the home page
- Did you notice this function?
- Comments?

### **4. The Star icon (marking)**

- When they mark an answer it's not only the question number in the question box (the top line) that gets a yellow frame, but a yellow *star* appears in the box by the number as well.
- The same star then appears on the list on the homepage
- Did they notice this change (that the star icon appears both in the number line and on the homepage)?
- I didn't see it on the homepage as it was black – searching for a yellow star?
- Do they see a point in this function?

### **5. Crocodile-thing**

- Scroll indicator toolbar
- Did they notice it?
- Comments?

### **6. Help Page**

- The Question Mark icon. New icon
- The aim of this page is to make some system functions clearer, e.g. if there are some icons they don't understand in spite of the description on paper.
- Security
- Do they actually notice this icon?

- Is such a function necessary?

## 7. The Filter icon

- Opens the non-answered questions
- Is this necessary in shorter tests?
- Do they see the necessity of having it in longer tests?

## Miscellaneous:

- Is the Recycle Bin less frightening?
- New "home list" format; their chosen answers in capital letters (the same with the questions themselves)
- Gradient navigations buttons: Grey vs. White
  - o Icon activation: e.g. if I haven't answered the question nr 5, the Recycle Bin icon next to the question nr 5 will be grey, and the others will be white (an answer that doesn't exist can't be deleted)
- First page
  - o No Start button
  - o Enough information?
  - o What is missing?
- Answer on the whole page?
  - o No, but on a great part of it
  - o Some comments?
- Homepage;
  - o Should it be written «Answer Overview» on this list to make the page clearer?
- Why is a certain line under overview marked?
  - o Blue line
  - o Technical things, default
  - o Can be removed

## **Project Questions - Sweden**

In Sweden they have developed two questionnaires for testing and improve the system.

<b>1) Have you used mentometersystems before:</b>				
Yes	No			
<b>2) Have you used mobile response systems in classrooms before?</b>				
Yes	No			
<b>3) Do you think that it is a good idea to use PeLe for tests?</b>				
Yes	No			
<b>4a) How difficult was it to access the student interface?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4b) How difficult was it use the student interface to answer questions?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4c) How difficult was it to navigate between questions in the student interface?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4d) How was it to submit the test for grading?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>5a) How do you like to answer multichoice questions?</b>				
Good	Quite good	Quite bad	Bad	
<b>5b) How well do you think multichoice questions shows knowledge?</b>				
Good	3 Quite good	Quite bad	Bad	
<b>5c) Do you think multichoice questions is fair?</b>				
Good	2 Quite good	Quite bad	Bad	
<b>5d) Would it be optimal to combine multichoice questions with text responses?</b>				
Good	Quite good	Quite bad	Bad	
<b>5e) Would PeLe work for grading tests?</b>				
Good	Quite good	Quite bad	Bad	

<b>1) Have you used mentometersystems before:</b>				
Yes	No			
<b>2) Have you used mobile response systems in classrooms before?</b>				
Yes	No			
<b>3) Do you think that it is a good idea to use PeLe for tests?</b>				
Yes	No			
<b>4a) How difficult was it to access the student interface?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4b) How difficult was it use the student interface to answer questions?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4c) How difficult was it to navigate between questions in the student interface?</b>				
Easy	Quite easy	Quite difficult	Difficult	
<b>4d) How was it to submit the test for grading?</b>				
Easy	Quite easy	Quite difficult	Difficult	

**5a) How do you like to answer multichoice questions?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5b) How well do you think multichoice questions shows knowledge?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5c) Do you think multichoice questions is fair?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5d) Would it be optimal to combine multichoice questions with text responses?**

Good	Quite Good	Quite bad	1 Bad	
------	------------	-----------	-------	--

**5e) Would PeLe work for grading tests?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**1) Have you used mentometersystems before:**

Yes	No			
-----	----	--	--	--

**2) Have you used mobile response systems in classrooms before?**

Yes	No			
-----	----	--	--	--

**3) Do you think that it is a good idea to use PeLe for tests?**

Yes	No			
-----	----	--	--	--

**4a) How difficult was it to access the student interface?**

Easy	Quite easy	Quite difficult	Difficult	
------	------------	-----------------	-----------	--

**4b) How difficult was it use the student interface to answer questions?**

Easy	Quite easy	Quite difficult	Difficult	
------	------------	-----------------	-----------	--

**4c) How difficult was it to navigate between questions in the student interface?**

Easy	Quite easy	Quite difficult	Difficult	
------	------------	-----------------	-----------	--

**4d) How was it to submit the test for grading?**

Easy	Quite easy	Quite difficult	Difficult	
------	------------	-----------------	-----------	--

**5a) How do you like to answer multichoice questions?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5b) How well do you think multichoice questions shows knowledge?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5c) Do you think multichoice questions is fair?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5d) Would it be optimal to combine multichoice questions with text responses?:**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

**5e) Would PeLe work for grading tests?**

Good	Quite Good	Quite bad	Bad	
------	------------	-----------	-----	--

In a class room enviroment:

<b>1) Male or female</b>				
Male	Female			
<b>2) To use PeLe is a Good way of conducting multi choice testing</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>3) The log in to PeLe works well</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>4)The student interface on PeLe is simple to use for the student</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>5) The use of PeLe gives the students possibility to get quick feedback on tests and examinations</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>6) The use of PeLe gives the teachers the possibility to go through the different test questions and explain what is right and wrong and why it is important for my learning process.</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>7) The group discussions we have in connection to using the Peer Learning software is a Good way of learning.</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>8) To answer a testquestion one more time by using PeLe software gives me the possibility to learn.</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>9) The PeLe software should be used more for tests in this subject.</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>10) The PeLe software should also be used for tests in other subjects</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>11) The PeLe software takes to much time from ordinary lectures</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree
<b>12) I can't see the benefits of PeLe and prefer to use ordinary tests</b>				
I totally agree	I agree	Neutral	I slightly disagree	I totally disagree

## **Project Questions - Romania**

In Romania they have tested different versions of PeLe software with special developed questionnaires. Outputs should give the inputs for program optimization for material testing courses and certification of them.

<i>1) My first impression of the Peer Learning Assessment Software (PeLe) is:</i>				
- Excellent	- Very good	- Satisfactory	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad
<i>2) Its fun to attend testing where the PeLe is used?</i>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel asleep
<i>3) What voting device did you use?</i>				
- I Pod provided by teacher	- Private I Pod	- Private cell phone	- PC	<input type="checkbox"/> Other device
<i>4) It was easy to use the voting device:</i>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> I totally disagree
<i>5) How was the introduction of the PeLe, before you used it during the demonstration?</i>				
- Excellent	- Very good	- Satisfactory	<input type="checkbox"/> Slightly insufficient	<input type="checkbox"/> Insufficient
<i>6) Are you conformable with the log-in system?</i>				
- Very comfortable	- Slightly comfortable	- Comfortable	<input type="checkbox"/> Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<i>7) Are you comfortable with the PeLe system interface?</i>				
- Very comfortable	- Slightly comfortable	- Comfortable	- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<i>8) Are you after this training session comfortable with using the PeLe system?</i>				
- Very comfortable	- Slightly comfortable	- Comfortable	<input type="checkbox"/> Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<i>9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?</i>				
- Excellent	- Very good	- Satisfactory	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad
<i>10) I prefer to revoce the questions that were most problematic for the class?</i>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>11) By using PeLe I had a chance to learn from the mistakes:</i>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>12) By using PeLe I had a chance to learn from peers:</i>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>13) How would you grade the importance of the teacher spending time on</i>				

<i>explaining whether the alternatives are right or wrong, and why?</i>				
- Extremely important	- Important	- Neutral	<input type="checkbox"/> Not that important	<input type="checkbox"/> Waste of time
14) To what extent do you feel that the PeLe engage and activate you during evaluation?				
- Very large	- Large	- Neutral	<input type="checkbox"/> Small	<input type="checkbox"/> Poor
15) To what extent do you think the PeLe can aid students learning of the course curriculum?				
- Very large	- Large	- Neutral	- Small	<input type="checkbox"/> Poor
16) PeLe should be used in all classes/lectures				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> I totally disagree

Second trial:

<b>1) My first impression of the Peer Learning Assessment Software (PeLe) is:</b>				
- Excellent	- Very good	- Satisfactory	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad
<b>2) Its fun to attend testing where the PeLe is used?</b>				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> Sorry I feel asleep
<b>3) What voting device did you use?</b>				
- I Pod provided by teacher	- Private I Pod	- Private cell phone	- PC	<input type="checkbox"/> Other device
<b>4) It was easy to use the voting device:</b>				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> I totally disagree
<b>5) How was the introduction of the PeLe, before you used it during the demonstration?</b>				
- Excellent	- Very good	- Satisfactory	- Slightly insufficient	<input type="checkbox"/> Insufficient
<b>6) Are you conformable with the log-in system?</b>				
- Very comfortable	- Slightly comfortable	- Comfortable	- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>7) Are you comfortable with the PeLe system interface?</b>				
- Very comfortable	- Slightly comfortable	- Comfortable	- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>8) Are you after this training session comfortable with using the PeLe system?</b>				
- Very comfortable	- Slightly comfortable	- Comfortable	- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?</b>				
- Excellent	- Very good	- Satisfactory	- Not very good	<input type="checkbox"/> Bad
<b>10) I prefer to revote the questions that were most problematic for the class?</b>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly	<input type="checkbox"/> Sorry I feel

			disagree	Asleep .....
<b>11) By using PeLe I had a chance to learn from the mistakes:</b>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<b>12) By using PeLe I had a chance to learn from peers:</b>				
- I totally agree	- I agree	- Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<b>13) How would you grade the importance of the teacher spending time on explaining whether the alternatives are right or wrong, and why?</b>				
- Extremely important	- Important	- Neutral	<input type="checkbox"/> Not that important	<input type="checkbox"/> Waste of time
<b>14) To what extent do you feel that the PeLe engage and activate you during evaluation?</b>				
- Very large	- Large	- Neutral	<input type="checkbox"/> Small	<input type="checkbox"/> Poor
<b>15) To what extent do you think the PeLe can aid students learning of the course curriculum?</b>				
- Very large	- Large	- Neutral	- Small	<input type="checkbox"/> Poor
<b>16) PeLe should be used in all classes/lectures</b>				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> I totally disagree
<b>17) To what extent you consider the 2D and 3D illustrations help understanding the theoretical problem/assessment question</b>				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> I totally disagree
<b>18) The 2D and 3D illustrations facilitate peer learning/assessment processes</b>				
- I totally agree	- I agree	- Neutral	- I slightly disagree	<input type="checkbox"/> I totally disagree

## **Project Questions - Hungary**

For checking the response from train the trainer courses questioner was developed in Hungary:

**1) My first impression of the Peer Learning Assessment Software (PeLe) is:**

- Excellent Very good Satisfactory Not very Bad good

**2) Its fun to attend testing where the PeLe is used?**

- I totally I agree Neutral I slightly Sorry I feel agree disagree asleep

**3) What voting device did you use?**

- i Pod - Private i - Private cell Other device provided Pod phone by MHTE

**4) It was easy to use the voting device:**

- I totally - I agree- Neutral I slightly I totally disagree agree disagree

**5) How was the introduction of the PeLe, before you used it during the demonstration?**

- Excellent - Very good Satisfactory Slightly Insufficient insufficient

**6) Are you conformable with the log-in system?**

- Very - Slightly - Slightly Very  
comfortable comfortable Comfortable uncomfortable Uncomfortable

**7) Are you comfortable with the PeLe system interface?**

- Very - Slightly - Slightly Very  
comfortable comfortable Comfortable uncomfortable Uncomfortable

**8) Are you after this training session comfortable with using the PeLe system?**

- Very - Slightly Slightly Very  
comfortable comfortable Comfortable uncomfortable Uncomfortable

**9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?**

- Excellent - Very good - Satisfactory Not very Bad good

**10) I prefer to revothe questions that were most problematic for the time?**

- I totally - I agree - Neutral I slightly Sorry I feel agree disagree asleep

**11) By using PeLe I had a chance to learn from the mistakes:**

- I totally - I agree - Neutral I slightly Sorry I feel agree disagree asleep

**12) By using PeLe I had a chance to learn from peers:**

- I totally - I agree - Neutral I slightly Sorry I feel agree disagree asleep

### **3 Results of Internal evaluation from Project partners**

Internal Project checklist is was fixed in first quarter of the project.

In frame of internal evaluation Partners from SL, HU, RO and NO did checked and confirm that all can agree with positive answers on following questions:

#### ***Project execution***

II- 1.1

Confirm that the aims of each WPs are appropriate for the Done-IT Project and achievable.

II- 1.2

Check that interim and final reports are correctly structured.

#### ***Timeline***

II- 2.1

Check if the deadlines of the various deliverables had been respected and if in case of some delays all the necessary adjustment had been adopted in the work plan.

II-2.2

In the case of some delays in the deliverable there was a sufficient degree of flexibility in the time allowed to produce the expected work?

#### ***Tasks of the various WPs***

II-3.1

Confirm with the partners that the tasks set are appropriate for them and make changes to the individual workloads if necessary.

II- 3.2

Confirm that all partners are undertaking the work required by each WP and that it conforms to the needs of the WP.

#### ***Establish and agree on working methods and techniques***

II- 4.1

Confirm that the target group of Done-IT is understood by all partners.

II- 4.2

Confirm that the evaluation strategy is adequate for the WG objectives.

II- 4.3

Confirm that the internal and external evaluation groups are correctly structured.

II- 4.4

Confirm that evaluation check lists are adequately structured and detailed.

#### ***Project management***

IP-5.1

Was the collaboration among Partners of the Consortium ensured?

IP- 5.2

Were all the meetings held planned?

IP-5.3

Was the review of the meetings done?

### ***Improvement and updating***

IP- 2.1

Was the database improved and updated according to the planned subdivision of the tasks?

### ***Training workshops***

IP- 4.1

Were the workshops fruitful?

IP- 3.1

Were the supportive documents to give guidance to the use and implementation of the Examination database developed?

IP- 4.2

Did the workshops provide a good skill for the execution of the statistical analysis of the exams result?

### ***Generation of pilot- exams***

IP-5.1

Was the ATB an effective implementation at national levels?

### ***Dissemination and Valorization Plan***

IP-6.1

Were the project results disseminated on a European basis in suitable ways, towards stakeholders in the welding community and the manufacturing industry?

### ***Quality Management***

IP- 7.1

Did the evaluation strategy developed took into account the actual needs of the end-user?

IP- 7.2

Did it occur a continuous quality control and quality assurance of results throughout the duration of the project?

**Miro Uran as representative from IZV (leader of this working package has validated it during the project. Check list is in appendix.**

## **4 Experiences obtained when using Peer Learning Assessment Service (PeLe) system in different sectors engineers (Norway) and (Sweden)**

### **Test 1 - Group 1**

**Tuesday, 20.09.2011**

Participants: Lars-Arne, Alex, Christer and Karl

From HiST: Gabrielle, Audun, Pascal, Delia and Mathias.

- Technical support; Pascal, Delia and Mathias
- Monitoring and discussion; Gabrielle and Audun

### **Part 1: Introduction and summary**

The students first have a meeting with Gabrielle where they go through the contracts and speak about the cooperation on *done it* and what it will mean for them. The students are already familiar with the project, so only a brief summary of the purpose of the project is made.

### **Part 2: Testing**

Afterwards we go to the room 314 where Audun, Pascal, Mathias and Delia are waiting. The room is “prepared” for students’ arrival. On a table there are four tests together with four iPods. There is also an iPod on an easel for each student, and this iPod is supposed to be used for filming.

Pascal gives the students an explanation of what is going to happen; they will have 10 minutes for doing the test, and they do it using an iPod. They don’t get to know anything about new technical changes or the interface itself. Before the test begins, the iPod cameras are turned on, as well as a tracking-system on the unit they use for answering, so that the students’ moves on the answering unit could be followed. In addition an extern camera is turned on and it is filming the whole desk with all the students. So the students are being:

- Filmed from an extern camera, as a group
- Filmed individually by an iPod-camera
- Each iPod is recording the single student’s moves

After 8 minutes they are informed that there are 2 minutes left. At the end of the test they are asked to finish working and put away all the devices.

### **Part 3: Discussion**

After the test we gather all the students and talk about their first impressions, experiences and views of the test that they have just done, from a technical point of view:

**The question about their first impressions gets the following answers:**

- A better “**homepage**”; more information after the login
  - o The first page they saw after the login showed itself to be a little unclear. So they chose different ways to begin. There was no explicit way to run the test.
  - o There should be a kind of a start button
  - o Homepage: summary/overview – and submit
  - o The same homepage that they can go back to during the whole test: the first thing they see after login, the one they can go to during doing the test in order to see an overview, and the last one they see before submitting.
- When **the test is done**, i.e. when they have answered 7 of 7 questions, they should be **automatically directed to the homepage** – where there should be possible to:
  - o See through the test (overview); see if they have answered everything – and what the answers were!
  - o submit
- So; when they have answered all the questions, they now have to click to go to the homepage (the house icon) themselves, and they think this should happen automatically. It goes more smoothly and is clearer to them. This is not something the students themselves should search, as it only creates insecurity.
- On the very test (paper form) there should be detailed information concerning the student interface; what the different icons mean; what happens if they click the recycle bin button; how to answer a question; how to submit the test etc. A kind of a **guide** that they can use if they are insecure.
- **iPod screenshot** on the very test (paper form); so that everyone can see the “homepage”, and get to know what is waiting for them.
- There should be possible to “**answer on the whole page/ svare på hele siden**”; when the students are now answering by clicking on the screen, they have to answer by clicking on the right hand side of the chosen answer; if they click on the left hand side of the chosen answer, the answer is not registered. That was seen as a bit tricky by a left-handed student that was doing the test.
- 3 of 4 didn't see the mark option.
- **The Recycle Bin icon = terrifying!**
  - o None of them dared to click on it. Not even when it was a game test, as they were afraid of deleting something. They simply didn't know what the icon would erase. They are used to this icon meaning deleting, and they were afraid of deleting something they didn't exactly know.
  - o That's why it can be good having an icon description in the paper edition of the test. Just to create some security. This is, of course, also

something that will be discussed in details with students before an actual test.

- **Navigation:** they used both:
  - o The arrows
  - o Slide
  - o and the numbers on the top
  - o ➔ It was totally unclear how they were supposed to do that, so they just tried to figure it out themselves.
  - o A little nervous about slide; they are afraid of losing their answer or seeing it being suddenly changed while moving to the next page.
- **A lot of misunderstandings:** they have misunderstood a lot about functionality (they didn't understand a lot of it), and they didn't take the time or dare to investigate during the test itself either. The most important for them was just to do the test and not to experiment.
  - o Many times they emphasize the value of icon description on the very paper form of the exam
- Greater color contrasts on the interface: e.g. black/white.
- **Doing a test using an iPod = stressful**
  - o They thought answering on the iPod was stressful
  - o This in spite of them being experienced in using hand-held units in tuition
  - o (besides, 3 of them attend AITEL)
  - o They noticed on themselves that they got stressed and a little nervous
  - o They feel comfortable answering on paper, as that is what they have done during their education
  - o Why being insecure? They know that the iPod can stop working suddenly
  - o They even got so insecure that none of them dared to let the iPod go to **standby** ☺
    - Even though they know that it goes to the same page afterwards
  - o So; when we are in a classroom, SECURITY is one of the most important factors to make things successful. The students must go through a detailed training, the icons must be clarified and explained, and besides there must be an icon description on the very test paper.
- During the test the students were given a time pressure; "2 minutes left", one of them got so stressed that he forgot to submit the test and logged out the whole system ☺

- **Cheating: this must be a closed system!** Already now they were tempted to use Google, but the insecurity about the system resulted in them not daring to do it, as they were afraid of losing their answers etc.
- **Submit; are you sure? Write: yes**
  - o Good!
  - o Makes them wake up and be aware of their own test submitting
  - o The opposite; just clicking “submit”, “are u sure?” And clicking yes a couple of times.
  - o Now they actually have to write that they are sure which is more demanding
  - o They must know that they are actually submitting, and having to write yes gave them this confirmation.

## **Test 1 - Group 2**

**Tuesday, 27.09.2011**

Participants:

- C-class: Christopher, Raymond and Erik (group 2a)
- D-class: Marte, Heidi and Hanna (group 2b)

From HiST: Gabrielle, Audun, Pascal, Delia and Mathias.

- Technical support; Pascal, Delia and Mathias
- Monitoring and discussion; Gabrielle and Audun

### **Part 1: Joint project introduction**

All the students first have a meeting with Gabrielle in the room 409. They are introduced to the Done IT project; what the project consists of, and what their participation will mean. Then the contracts are being signed and read.

### **Part 2: Separate testing between boys and girls**

The boys and the girls are divided into two groups, a girl group and a boy group. Afterwards they are tested separately. The girls are the first that are doing the test while the boys are waiting in the waiting room. The test takes about 10 minutes. Afterwards the groups change places. The girls go to the meeting room, and the boys are escorted to the room 314. Gabrielle then holds a discussion with the girls while the team in 314 is discussing the test with the boys after they have taken it. Both groups do the same test as the group 1.

Why the separate sex testing?

- Find out if there are differences between the girls' and the boys' first impressions and experiences of the testing.
- Assure that the girls dare to speak and that the boys are not dominating.
- Why is Gabrielle holding the discussion with the girls?
  - o The thought was that it could be safer and easier for the girls to talk to a lady than to a man. More comfortable perhaps.

The test itself is run in the same way for both groups, the same procedure as for the test 1 for group 1:

The test is carried out in the room 314. The room is "prepared" in advance, before the students show up. On a table there are 3 tests (the same test that was used for group 1) with 3 iPods. There is also an iPod on an easel for each student, and this iPod is supposed to be used for filming.

Pascal gives the students an explanation of what is going to happen; they will have 10 minutes for doing the test, and they do it using an iPod. They don't get to know anything about new technical changes or the interface itself. Before the test begins, the iPod cameras are turned on, as well as a tracking-system on the unit they use for answering, so that the students' moves on the answering unit could be followed. In addition an extern camera is turned on and it is filming the whole desk with all the students. So the students are being:

- Filmed from an extern camera, as a group
- Filmed individually by an iPod-camera
- Each iPod is recording the single student's moves

After 8 minutes they are informed that there are 2 minutes left. At the end of the test they are asked to submit the test and put away the iPod.

Group 2b – the girls:

- The girls look unsure of how to submit, they are searching the iPod. One of the logs out of the system. One of the girls found out how to submit, the two other needed help.

Having done the test the girls are escorted back to the meeting. All turns in a mess when the boys have come down, as nothing is prepared for the boys after the girls doing the test. There should have been left more time between testing the two groups. As a result of this one forgets to turn on the tracking system on the iPods.  
Report from the boys' group; Pascal and Audun.

### **Part 3: Discussion**

Based on the feedback on test 1 from group 1, we made a checklist that we used during the discussion with both the boys and the girls (see the file *checklist test 1*). This was done in order to be able to compare the groups' answers.

#### **Discussion with the group 2b (the girls):**

After the test Gabrielle is talking with the girls about their first impressions, experiences and views of the test they have just done:

#### **Being asked about their first impression, they give the following answers:**

The first comments:

- They were feeling nervous
- Not used to conversation in English
- Stresses for the time pressure (only 10 minutes) which resulted in them not reading through the answers so carefully
- Just feeling unfamiliar - a different setting from what are used to

#### **- The first page they see:**

- o Told them nothing – short and very confusing
- o Thought it was the first task
- o The first page they see after login should contain more information:
  - Welcome
  - Information about the very test – that they for instance have 1 hour
  - A distinct “start test” button
  - The possibility of changing one's mind during the test (one of the girls didn't realize that)
- o Should be a plain and clear page without too much information

- → They believe that a better first page can lead to students being more relaxed and having a good start of the test
- User friendliness – important; they don't want to waste their time on technical matters during a test, since it's crucial to have the time for the test and the answers!
- Good that the answer page changes color after choosing an answer, so that they clearly see what they have chosen
- **The icon description on the paper:**
  - Good!
  - They are often stressed during a test, so having a clear icon description available can reduce the stress when submitting their answers
- **Navigation:**
  - The arrows
  - Number sequence on the top
  - The arrows:
    - Two of them were not sure whether they (and the rest of the icon bar) had something to do with the test
    - There should be an arrow on each side of the interface; previous – next
  - They didn't understand the slide function
- One of the girls that had more than one solution could have answered correctly to one of the questions.
- **Click on the whole of the iPod**
  - They realized they only could click on the right hand side
  - They should be able to click on the whole!

### **The icons themselves – a story in itself**

- The girls have fairly misunderstood the icons. First of all, they thought that the icon bar on the page bottom didn't have anything to do with the test itself. Since it appears in colors different from the interface, they thought it was a part of the iPod software. None of the girls had been using an iPod previously.
- They repeated many times that the icon bar shouldn't be in a different color than the interface.
- → They should be in same color in order to emphasize the connection to the rest of the interface
- So they didn't use the icons, apart from one of them trying to submit having done the first question, but she didn't try any other buttons.
- Although they neither thought the icons had nothing to do with the system nor tried using them, they all memorized all the icons.

Comments on the icons:

- **The star icon:**
  - o Favourites?
  - o Internet link?
  - o One of the girls guessed that it might have a marking function, but she was unsure about what could be marked.
    - They all thought it sounded clever!
- **Recycle Bin**
  - o "I didn't dare to click that one anyway"
  - o Afraid of deleting the test
  - o Here they guess right as well, thinking that the icon is used to delete the last answer
  - o But they repeat they thought the icon was terrifying
  - o There was a proposal about using an X-icon instead of Recycle Bin
  - o → Once again they emphasize the value of having an icon description on paper
- **Magnifier (filter):**
  - o They thought it was a kind of a search mode, Internet search
  - o Or a way to zoom in
  - o The girls were least attentive to this icon
  - o But do they see its value?
    - "well"
    - They see what is left to be answered on the number bar on the top of the page
    - On short tests the number bar and changing box colors is enough
    - But they can see its value when used on longer tests
- **Submit (the homepage icon)**
  - o Once this icon is mentioned the girls burst out laughing ☺
    - Two of the girls didn't figure out how to submit the test, and one of them ended up logging out of the system
    - The one that did understand it, understood it because she misunderstood it at the beginning of the test; she thought she had to click submit after each question, but she found out that it wasn't true (having to write yes etc.)
  - o It was unclear for them where they should go in order to hand in the test, so they ended up being nervous, insecure, and felt a little dull and embarrassed.

- The girls say that the submit button should be on a separate page which would open when they have answered the last question. This page should contain:
  - An overview of the questions and the written answers
    - → This should be done so that they can easily compare these answers with the answers on paper before they hand in. The last check.
  - Beside the overview there should be given a possibility of going back and making changes in the answers, as well as the possibility of handing in
  - A big Submit button!
- **Submit – type in yes**
  - They didn't particularly like this part
  - They would prefer having to click **yes** twice
- **Cheating – closed system?**
  - A typical girl answer to this with cheating; "no, but what's the point in it, then it wouldn't be me doing the test" ☺
  - But they see it as an advantage, as they believe someone would think of cheating
  - Personally they didn't dare to cheat as they were filmed ☺
- **Did they let the iPod go to standby?**
  - Two of the girls were so nervous that they didn't dare to let the iPod go to standby
  - The third girl simply didn't think of that. But she was using the iPod so often that it was constantly on during the test

#### **Introduction of the test system in a class:**

- First of all, a detailed review,
- And then a pretest; learning by doing (the same I do with SRS)
- So; instead of too much talking, one should present an overview followed by a test, so that they immediately get the chance to try it on
- Moreover, there should be icon description on paper available!

#### **Color usage:**

- Green makes an impression of the answer being true
- But they realized it could indicate something else
- One of them thought it indicated well the fact that she actually managed to answer ☺
- They think the color usage was good and they like it better than if there were only black and white

- ➔ The only thing they emphasize once more is the color usage in the bottom icon bar – this color should match the rest of the interface!

### **After the test; what do they get then?**

- The girl would like to have the possibility of seeing through the whole test after doing it; their answers; which ones were true; and which ones were false
- They don't need to see this immediately after they have clicked to submit, as they understand it could influence the teacher's methodology.
- But they would like to be given the possibility of checking their complete test work after the test.

### **Discussion with the group 2b (the boys):**

Based on the feedback on test 1 from group 1, we made a checklist that we used during the discussion with both the boys and the girls (see the file *checklist test 1*). This was done in order to be able to compare the groups' answers. There were too many interviewers this time so the focus was somewhat different from after the first test, where we focused on the students' questions. This time the focus was on the technical details and the software symbols. Furthermore, this group was more insecure answering in English. This conversation was to be 10 minutes shorter as well, so there was barely enough time to talk. That's why we had to steer the conversation a bit more in order to go through more questions on the checklist.

After the test Audun, Pascal, Delia and Mathias are talking with the boys about their first impressions, experiences and views of the test they have just done:

**Being asked about their first impression, they give the following answers:**

The first comments:

- Running the test was difficult, how do you run the test?
- Not used to having a conversation in English
- It was difficult to find out how to find the next question.
- Bigger buttons needed.
- **The first page they saw:**
  - It was a strange beginning, how to run the test?
  - Difficulties in finding out how to continue the test, i.e. finding the button in the lower right corner.
  - There should be a tutorial, not a long one, but it would make them feel more secure. It should contain a symbol description.
- They weren't afraid of the test being electronic; they felt more comfortable doing it than a paper test. They trusted the technology and weren't using the task to mark true or false.
- One of the students wasn't sure about the color appearing when choosing an answer. He believed he was choosing right answer when it turned green and false answer when it turned red.
- **Navigation:**

- The arrows, one of three didn't notice that possibility. The two other students tried it when they were to continue with the test.
- No one used the slide function. They were afraid that the chosen answer would change if they used the slide function.
- They were generally afraid of clicking something unknown, as they didn't know what it could do to the test.

## The icons

The boys misunderstood the icons. They didn't know the meaning of the icons and they were mostly avoiding them.

The comments on the icons:

- **The star:**
  - They thought this was Favorites. All the 3 thought this symbol wasn't properly used.
- **Recycle Bin:**
  - They didn't see the recycle bin, they wondered about its usage afterwards. They thought it might be used for deleting.
  - Instead of having the recycle bin one should be able to click on the chosen answer one wants to delete. Click once to check and once more to uncheck it.
- **The magnifier (filter):**
  - 2 of 3 saw this symbol one of them thought it was zoom in. When they were explained its function, they thought it must be important on a longer test. Especially if you skip the difficult questions. In this case one can easily see which question one hasn't answered.
    - Important that an answered question changes its color.
- **Submit (the homepage icon)**
  - When the last question is answered one should see a list of the answered questions and the answers. They would like to have a list with question numbers and the chosen answers. This in order to be able to check their answers on paper and compare them to the ones on the iPhone.
  - Under the summary there should be a submit button.
  - All the three had done the test before the 10 minutes had elapsed and the very submission went fine. Little fuss about submission, one of them just waited when he had answered all the questions.
  - But a great deal of uncertainty about the end of the test, there should be a separate ending page with an overview and a distinct submit button.
  - **Submit – type in yes**

- Everyone read the message about YES, but one of them thought it was unnecessary. Besides, it was difficult to type YES, as his thumbs were shaking.
- **Cheating – closed system?**
  - Should be closed, they could have checked the Internet if they'd wanted.
- **Did they let the iPod go to standby?**
  - We didn't reach this topic, but it wasn't something they commented on themselves.

#### **4.1.1 Summary of test nr. 1 – all groups: what needs to be changed?**

- Meeting, 29. 9. 2011.
- Between: Gabrielle, Trond Morten, Pascal, Mathias and Dahlia.
- Subject: All the groups having done the first test and a discussion – what technical changes need to be done?

Based on the feedback from the groups we have made a list of technical changes. We have considered all student feedback. After a thorough evaluation we have made a list of what we consider the most important changes to be made:

##### **1. Start page**

- When students log in on the test side with their username and password, they should be redirected to a kind of a *start page*:
  - Code
  - Welcome
  - Message; “you’ve got one hour” etc. – teacher’s decision
  - START – button
  - ? – a button one can press in order to get additional information about the test; how to navigate; icon description (the same piece of information to be found in the test paper); how to hand in the test etc.
- First when the teacher runs the test, they are able to click on START; therefore the START button should *not* be activated before the teacher runs the test. But they should be able to log in beforehand, so that the teacher can check whether everyone has managed to get to the test.
- When the students run the test – they are directed to the question nr. 1 and they can begin to answer, navigate as they wish etc.

The main thought is that the first the students will see is a distinct start page that offers them the information they need, access to more information if they need it, and from which they start the test themselves by clicking on “start test”.

## 2. Homepage – overview – submit

- Homepage should contain an overview of:
  - o The questions they have answered
  - o The chosen answers to the different questions
  - o A direct link which enables them to edit the answers (if they notice they haven't answered to the question nr. 3, they click on the arrow link by the question, are directed to question nr. 3 and can answer it).
  - o Clear color contrasts! One color for the answered questions, another for blank questions.
  - o **Submit** button (at the bottom of the page)

This should be a page that the students can go to during the test in order to see an overview of their own answers. The student feedback shows that this page is the most important one in terms of delivering the test. When they have done the test, they would like to have an overview of the answered questions and of the answers themselves, so that they can compare it to what they have written on their piece of paper. A last check before they hand in the test.

So it should be the same page they are directed to, no matter whether they just want to have an overview or to deliver the test. Both should be found under the homepage icon.

**BUT**, when they have answered the questions – what then?

- The students want to go directly to this page (homepage)
- Which is technically complicated
- The students answer in a random order, so the page cannot pop up after question 10 of 10 has been answered.
- When all the questions are answered, in any possible order, SOMETHING should instantly show up on their screen! They must be notified that they have now answered 10 of 10 questions, where they can scroll, see and overview and hand in the test. Down-drop was mentioned previously.

## 3. Use of colors and contrasts

- The icon line should have the same colors as the rest of the system in order to make it clear that it is a part of the test page itself
- The navigation on the top – the line with shouldn't change color to green when the students have answered. The green is easily associated with *correct*.
  - o This line could be "empty boxes" that get "filled" as the students answer
  - o Blue has been proposed as the color
- Clear color contrasts on the homepage; closed and open question should be marked with different colors

## 4. Give answer on the whole page

- It should be possible to give the answer on the whole of the "answering page", and not only in the row on the right side

The last question, all of them being answered; what happens then?

### Otherwise:

#### The icons; what does that mean?

- This is a point that we will return to. We still have no feedback on which icons should be changed, and what they should be changed to. No student has dared to explore the icons.
- The icons themselves will also be explained more about when this system is introduced to a class, using both lecture and pilot testing, and moreover students will have a written icon description on their test paper.

#### Cheating – closed system?

- Impossible to prevent cheating from the technical point of view
- One can have a closed network and follow if the students are logging onto a network that gives them Internet access – but still there are a lot of students having the access to a mobile network. Which is something we don't have the possibility to control
- They can use the mobile device to make notes for the test
- 
- All in all, this is a topic that needs a careful consideration; what can we do to diminish the possibility of cheating? We cannot eliminate it.
- Number of choices, question type can play an important part here as well

#### Having done the test – what message do the students get on the screen – when do they get to see their results?

- Teacher's decision
- Thanks for the delivery. Delivery successful
- Please wait?
- Wait on what, teacher's choice?
- So: what information do they need?
- Later on the students should get access to their test, so that they can see their achievements, but when?
  - o Controlled by teacher?
  - o Can this be changed directly? Or does it have to be adjusted before the very test?

#### Joint summary with all the groups after the 2nd test:

- Better!
- Better than the previous time – they are feeling more accustomed. Already safer 😊
- Less strange

- More stressed by the test that the system
- Clearer
- Good colour usage
  - o Understood the icons ☺
  - o More integral
- The icons: some of them unclear – it's crucial to have an explanation in advanced
  - o This thinking about safety
- **Submit bar** – good and clear function
  - o They smiled seeing it ☺
  - o Clear = security
- **Filter icon**
  - Hat, vase or flashlight – unclear icon.
  - Some got it at the first sight
  - But they repeat that the very icon is okay so far, since they don't relate it to anything else (as they do with the Star icon), and as long as the students get a thorough training and introduction into use of the student interface, it is probably going to work. But it's not a transparent and easily understood marking icon.
- **Recycle Bin**
  - Do we really need this icon, or is it enough to click «uncheck» on the chosen answer. Check – Uncheck function.
- **Help icon**
  - It shouldn't be a separate page, but be available and transparent on the answering page with a clear icon description
- **Star icon** – should be a **flag** – no image of flag, while star is connected with Favorites
  - Or; both? So; do we need two marking functions?
  - Flag for the teacher, star for the students?
  - If the teacher chooses to often use the marking function, the students miss the possibility of marking their work and using this function during the test. In this case it becomes teacher's accessory and not theirs.
  - But; if the teacher asks them to mark, they need to evaluate their questions in a new way. cf. Nicol.
  - Very many students prefer having the marking possibility themselves to teacher having it, if they must choose
  - They want to be able to use this function themselves

- They see the teacher's use of it, but most of them still want it for themselves
  
- **Progress bar**
  - Good signal of the given answer, but
  - Also misleading! When they have to choose a number of correct answers
  - What do we do?
    - Can we only have one bar that is being filled, but that is not measuring the progress, or is it the same thing?
    - Or can't we just remove it?
  
- A better **first page – with Start button!**
  
- To slide is scary as you can change chosen answer.
- Also marked questions should be visible there, not only the non-answered ones.
- They would like to spend more time on the program than the test to try it out thoroughly.

### **Test 3 - Group 1 and 2**

**Tuesday, 13.12.2011**

Participants:

- Group 1: Lars-Arne, Alex, Christer and Karl
- Group 2 a: Hilde, Hanna and Marte
- Group 2 b: Christopher and Erik (Raymond missing)

From HiST: Gabrielle, Audun, Pascal, Mathias, Dahlia and Adrian.

- Technical support: Pascal, Mathias, Dahlia and Adrian
- Observation and discussion: Gabrielle and Audun.

### **Part 1: Testing**

We meet in the same room (314) as on the two previous tests. This is the first time all the students are gathered on a joint test. Three tables are “prepared” for their arrival; cameras (extern plus the iPod cameras on two of the tables), the test, instruction list, draft paper and pen.

We are running a slightly different test this time. This is not a curriculum test, but more a test of the evaluation system. Check “Question list 1” and “Instruction list”. It's a larger test with 26 instructions in total. Our aim is to let them “play” with the interface, and see if they manage to follow the instructions they get, if they for instance manage to mark question 6, jump to question 9 afterwards, and then delete question 11. The students get between 20 and 30 minutes for the test.

There were a number of technical problems at the beginning of the test – all the iPod weren't prepared, and the cameras weren't ready to start shooting. We had to use some old iPods that caused a little extra work. Approximately 20 minutes after the scheduled time (11.20) did we fully run the test.

Just few technical problems during the test. One of the old iPods turns off, so one of the students gets a new one. But at the end when the students have delivered the test and when they get a message (on the instruction list) to log on once more, there are a number of problems. No student manages to log on one more time. In the aftermath we realized that there was a mistake done configuring the iPhones.

## Part 2: discussion

After the test Gabrielle and Audun are talking with the students about the last changes made to the interface.

**The following changes have been made since the previous test the students did:**

- Start page with a start button
- The star icon is replaced by a flag icon
- Recycle bin has been removed.
- Progress bar has been removed.

### **Student feedback:**

- The students that used the old iPods found the system to be very slow. This impression was repeated a few times.
- One of the students said their iPhone was jumping back and forth between the questions.
- They noticed there was no recycle bin icon
- They also noticed that the star had turned to a flag
  - o They liked the flag being conspicuous and that the same color matched the whole interface.
- Submit bar was thought to be very clear.
- The top navigation (the number line) was a bit complicated for some of them. It should be possible to use "the crocodile signs" as arrows, and possibly jump forward 5-10 questions.
  - o It's possible to scroll that line, but this student didn't think of it.
- The number line there should show more clearly which question they are at, as it's a bit difficult to see where they are (were) going back and forth on the line. So the question they are at should be marked more clearly.
- They find a way to check if they can choose more alternatives, different "boxes" for different questions.

- Discussion about cheating. Closed net was suggested as a solution. This discussion concerning cheating is something we need to go back to, as much of it is still unclear.
- The conversation finishes with going through the students' contribution to the interface. Gabrielle goes through the 13 most important points. Eventually, the students are thanked for the very good and constructive collaboration.

## Done-IT: What have we learnt of the students?

### 1. Start page

- After students log on the test page with their user name and password, they are directed to a kind of a *start page*:
- When they run the test, they are directed to question 1, and they can immediately begin to answer, navigate as they wish etc.

The main thought is that the first the students will see is a distinct start page that offers them the information they need, access to more information if they need it, and from which they start the test themselves by clicking on "start test". The students think this makes the start much easier.

→ **Our solution:** After login they are now directed to a clear start page with a start button.

### 2. Homepage – overview – submit

- The students wanted to have a Home page that was supposed to have an overview of:
  - Answered questions
  - Their answers to the different questions
  - Possibility to submit (at the bottom of the page)

This is a page the students can go to during the test in order to see an overview of their answers. The student feedback shows that this page is crucial when delivering the test. Having done the test, they would like to have an overview of what they have answered and their answers, so that they can compare it to what they have written on their ark. A last check before delivering the test.

→ **Our solution:** a home page (house icon), where they have such overview. There they can also see which questions they have marked.

- Submit at the bottom of this page.

### 3. BUT, having answered all the questions – what then?

- The students want to go directly to this page (home page)
- This is technically complicated
- The students answer in random order, so this page cannot pop up after question 10 of 10 is answered.
- When all the questions are answered, in any order, something should IMMEDIATELY happen on their screen! They have to get a notice that they

have answered 10 of 10 questions, having to go to see an overview and deliver. "Down-drop" was mentioned.

→ **Our solution:** submit bar

- In students' opinion, this is a very clear and good function!
- They either saw the green bar, clicked on it and gave the answer or saw that the home icon turned red and went there.
- None of the students had problems delivering the test this time ☺

#### 4. Color usage and contrasts

- The students think that the icon line should be the same color as the rest of the system – to make it clear that it's a part of the test page
- Navigation on the top – the number line – shouldn't change color to green when the students have answered. Green is connected to correct.

→ **Our solution:** using **blue** and **red**. Red for open questions, blue for unanswered.

- The students think this is a clear color usage. Red tells them that something is wrong, which is true; they haven't answered. One of them being color blind saw the contrasts clearly.
- Everyone understood that the icons belonged to the interface.

#### 5. Answer on the whole page

- Must be possible to answer on the whole "answering page", not only in the line on the right-hand side

→ **Our solution:** This was adjusted a bit; due to technical reasons, they still won't be able to answer on the whole page, but on a great part of it.

#### 6. The Filter icon

- Hat, vase or flashlight – unclear icon.
- But they repeat that the very icon is okay so far, since they don't relate it to anything else (as they do with the Star icon), and as long as the students get a thorough training and introduction into use of the student interface, it is probably going to work. But it's not a transparent and easily understood marking icon.

→ **Our solution:** Let the icon as it is.

#### 7. Recycle bin

- This is and remains a "terrifying" icon to the students, and few of them feel secure using it.
- The students regard it as a more natural way to delete their answers by using "check-uncheck" function.

→ **Our solution:** We decide to remove this icon. None of us sees the point of having an icon no student dares to use, and that makes them insecure, especially since they can delete their chosen answers using check-uncheck, being the "delete method" they personally prefer.

- Check-uncheck function now works on all type questions.

## 8. The Star icon – should be a **flag** – no associations to flag, while star is favorite

- Many students have commented on the star icon. They have strong associations to this icon, one of them being 'favorite'. This makes it difficult for them to accept at once that this icon means 'to mark'.
- There was a student proposal about using the flag icon instead. This was presented to the rest of the students, and all of them liked the idea. They don't associate the flag icon to something else already, so they can associate it to "to mark" or "to flag something".

→ **Our solution:** We change the icon from star to flag.

## 9. Who is this marking function for?

- An interesting question is who this function is actually made for. If the teacher often uses it, the students lose the possibility of marking themselves and use this function as their own utility during the test (e.g. mark the questions they want to see through once more). It becomes a teacher utility and not a student one.
- There is almost no doubt among students, if they have to choose who should use this function, it should be them! They all see the use of being able to mark and use the function as a utility during a test. They also see a point in the teacher asking them to mark certain questions and they believe they can help them think of the questions more deeply.

→ **So what do we do?** Either or, or do we need to marking functions?

- We don't want the teacher not to be able to use this function, as this can have an important pedagogic role, as marking questions may result in students rethinking the questions. cf. Nicol, 2007.
- We don't want to remove an important student utility either.
- By removing the recycle bin icon we're making additional space on the icon line, so we're planning on having to separate marking functions and icons. The students will keep the flag as their marker, and later on

a new icon will be made which will serve as teacher utility. It's been suggested that this icon could be an index finger or something like that.

## 10. Progress bar

- This bar was clearly signalizing given answer to the students
- On the other hand it can also be misleading (when they have to choose a number of correct answers, and the bar is not filled, which is very strange to them).
  - It just isn't working as we've expected, being misleading at some question types.
  - The students get clear signals having answered each question, both the very question route, ticking sign and the most upper line where the red box turns blue. If they haven't spotted this bar, we don't think they're going to miss it.

→ **What do we do?** We decide to remove it.

- o It just isn't working as we've expected, being misleading at some question types.
- o The students get clear signals having answered each question, both the very question route, ticking sign and the most upper line where the red box turns blue. If they haven't spotted this bar, we don't think they're going to miss it.

## 11. Cheating – closed system?

- Impossible to prevent from cheating from the technical point of view
- One can have a closed network and follow if the students are logging onto a network that gives them Internet access – but still there are a lot of students having the access to a mobile network. Which is something we don't have the possibility to control
- They can use the mobile device to make notes for the test
- All in all, this is a topic that needs a careful consideration; what can we do to diminish the possibility of cheating? We cannot eliminate it.
- Number of choices, question type can play an important part here as well

## 12. Test ferdig – hvilken beskjed får studentene på skjermen – når får de se resultatene sine?

- Teacher's decision
- Thanks for the delivery. Delivery successful
- Wait on what, teacher's choice?
- So: what information do they need?

- Later on the students should get access to their test, so that they can see their achievements, but when?
  - o Controlled by teacher?
  - o Can this be changed directly? Or does it have to be adjusted before the very test?

## **COURSE EVALUATION IN SWEDEN**

We tested the PeLe system on two courses in material testing (part of welding education). The tests was conducted as a part of the courses and we evaluated the impact of the PeLe tests afterwards with surveys and in the case of the test in Yrkesakademin also with interviews.

*Table 1. The first testing of PeLe for mobile devices in material testing courses was done at the welding department of Staffansgymnasiet (upper secondary school) 18. 4. 2012 with 10 students.*

<b>1) Have you used mentometersystems before:</b>				
1 Yes	9 No			
<b>2) Have you used mobile response systems in classrooms before?</b>				
1 Yes	9 No			
<b>3) Do you think that it is a good idea to use PeLe for tests?</b>				
8 Yes	2 No			
<b>4a) How difficult was it to access the student interface?</b>				
6 Easy	2 Quite easy	1 Quite difficult	1 Difficult	
<b>4b) How difficult was it use the student interface to answer questions?</b>				
6 Easy	3 Quite easy	1 Quite difficult	Difficult	
<b>4c) How difficult was it to navigate between questions in the student interface?</b>				
7 Easy	1 Quite easy	2 Quite difficult	0 Difficult	
<b>4d) How was it to submit the test for grading?</b>				
5 Easy	4 Quite easy	1 Quite difficult	0 Difficult	
<b>5a) How do you like to answer multichoice questions?</b>				
7 Good	1 Quite Good	2 Quite bad	Bad	
<b>5b) How well do you think multichoice questions shows knowledge?</b>				
5 Good	3 Quite Good	2 Quite bad	Bad	
<b>5c) Do you think multichoice questions is fair?</b>				
8 Good	2 Quite Good	Quite bad	Bad	
<b>5d) Would it be optimal to combine multichoice questions with text responses?</b>				
8 Good	Quite Good	2 Quite bad	Bad	

<b>5e) Would PeLe work for grading tests?</b>				
6 Good	4 Quite Good	Quite bad	Bad	

Table 2: The second testing of PeLe for mobile devices in material testing courses was done at Yrkessakademin, 08. 5. 2012 with 10 students.

<b>1) Have you used mentometersystems before:</b>				
0 Yes	10 No			
<b>2) Have you used mobile response systems in classrooms before?</b>				
0 Yes	10 No			
<b>3) Do you think that it is a good idea to use PeLe for tests?</b>				
9 Yes	1 No			
<b>4a) How difficult was it to access the student interface?</b>				
5 Easy	5 Quite easy	Quite difficult	Difficult	
<b>4b) How difficult was it use the student interface to answer questions?</b>				
7 Easy	3 Quite easy	Quite difficult	Difficult	
<b>4c) How difficult was it to navigate between questions in the student interface?</b>				
8 Easy	2 Quite easy	2 Quite difficult	0 Difficult	
<b>4d) How was it to submit the test for grading?</b>				
6 Easy	4 Quite easy	Quite difficult	0 Difficult	
<b>5a) How do you like to answer multichoice questions?</b>				
6 Good	3 Quite Good	1 Quite bad	Bad	
<b>5b) How well do you think multichoice questions shows knowledge?</b>				
6 Good	4 Quite Good	Quite bad	Bad	
<b>5c) Do you think multichoice questions is fair?</b>				
6 Good	1 Quite Good	3 Quite bad	Bad	
<b>5d) Would it be optimal to combine multichoice questions with text responses?</b>				
4 Good	2 Quite Good	3 Quite bad	1 Bad	
<b>5e) Would PeLe work for grading tests?</b>				
7 Good	3 Quite Good	Quite bad	Bad	

The students we interviewed in connection with the tests thought that the student interface was intuitive and that it was practical for material testers since it allowed for feedback by the teachers and continuous learning. The students also thought that multichoice questions and peer learning was beneficial to learning especially to students that had difficulty to follow Swedish curricula since they come from a foreign country.

Table 3 The test in material testing at Yrkessakademin was conducted as a part of the syllabus of the Welding course that is approximately two month. The course trains the student in welding and material testing forms an integrated part of the course.

<b>Setsquares Yrkessakademin</b>
Heta Arbeten
IW-teori

MIG/MAG rörelektrod käl raka
MIG/MAG rörelektrod käl runda
MIG/MAG rörelektrod plåt
MIG/MAG trådelektron käl raka
MIG/MAG trådelektron käl runda
MMA käl raka
MMA käl runda
MMA plåt
MMA rör
Praktik
Ritningsläsning
Svetsarprövning
Svetsbeteckningar
TIG käl raka
TIG käl runda
TIG plåt
TIG rör

We also tested PeLe in two classes in History upper secondary school level and Nursing training which is a VET during the spring of 2012. The history courses had 9 students and 16 student respectively and the Nursing courses both had 16 students (all together 57 students).

*Table 4. Responses obtained in a survey from upper secondary school students in History courses and VET students in History and Nursing courses that used the Pele system in their courses. There were 57 students in the different courses.*

<b>1) Have you used mentometersystems before:</b>				
23 Yes	34 No			
<b>2) Have you used mobile response systems in classrooms before?</b>				
19 Yes	38 No			
<b>3) Do you think that it is a good idea to use PeLe for tests?</b>				
41 Yes	16 No			
<b>4a) How difficult was it to access the student interface?</b>				
24 Easy	27 Quite easy	3 Quite difficult	3 Difficult	
<b>4b) How difficult was it use the student interface to answer questions?</b>				
27 Easy	26 Quite easy	3 Quite difficult	1 Difficult	
<b>4c) How difficult was it to navigate between questions in the student interface?</b>				
35 Easy	20 Quite easy	2 Quite difficult	Difficult	
<b>4d) How was it to submit the test for grading?</b>				
34 Easy	18 Quite easy	4 Quite difficult	1 Difficult	

<b>5a) How do you like to answer multichoice questions?</b>				
40 Good	15 Quite Good	2 Quite bad	Bad	
<b>5b) How well do you think multichoice questions shows knowledge?</b>				
35 Good	20 Quite Good	2 Quite bad	Bad	
<b>5c) Do you think multichoice questions is fair?</b>				
37 Good	19 Quite Good	1 Quite bad	Bad	
<b>5d) Would it be optimal to combine multichoice questions with textresponses?:</b>				
39 Good	15 Quite Good	3 Quite bad	Bad	
<b>5e) Would PeLe work for grading tests?</b>				
38 Good	17 Quite Good	2 Quite bad	Bad	

In addition the survey also contained written questions and the students in those answers thought that multichoice questions were appropriate and relevant to their subject and that it measured relevant knowledge. Generally the students thought that Done-IT software gave them quick response on how they scored and that it gave them feedback on what they needed to improve

During the Autumn of 2012 and spring of 2013 we also tested PeLe on two further nursing classes and also on two swedish classes, one class in social science and one class in computer science all of them on a upper secondary school level. The nursing classes had 19 and 23 students respectively and the swedish classes had 15 and 6 students respectively. The class in social science had 15 students and the class in computer science had 10 students.

We developed the questionerars in cooperation with Gabrielle at Hist during our workshop in June 2012 to further reflect the use of PeLe and peer learning software in a class room enviroment.

<b>1) Male or female</b>				
16 Male	73 Female			
<b>2) To use PeLe is a Good way of conducting multi choice testing</b>				
17 I totally agree	34 I agree	32 Neutral	6 I slightly disagree	I totally disagree
<b>3) The log in to PeLe works well</b>				
14 I totally agree	44 I agree	26 Neutral	5 I slightly disagree	I totally disagree
<b>4)The student interface on PeLe is simple to use for the student</b>				
21 I totally agree	29 I agree	26 Neutral	9 I slightly disagree	4 I totally disagree
<b>5) The use of PeLe gives the students possibility to get quick feedback on tests and examinations</b>				
52 I totally agree	18 I agree	19 Neutral	I slightly disagree	I totally disagree
<b>6)The use of PeLe gives the teachers the possibility to go through the different test questions and explain what is right and wrong and why it is</b>				

<b><i>important for my learning process.</i></b>				
28 I totally agree	37 I agree	19 Neutral	5 I slightly disagree	I totally disagree
<b>7) The gruppdiskussions we have in connection to using the Peer Learning software is a Good way of learning.</b>				
32 I totally agree	33 I agree	19 Neutral	4 I slightly disagree	1 I totally disagree
<b>8) To answer a testquestion one more time by using PeLe software gives me the possibility to learn.</b>				
36 I totally agree	37 I agree	10 Neutral	1 I slightly disagree	5 I totally disagree
<b>9) The PeLe software should be used more for tests in this subject.</b>				
30 I totally agree	25 I agree	23 Neutral	10 I slightly disagree	1 I totally disagree
<b>10) The PeLe software should also be used for tests in other subjects</b>				
32 I totally agree	25 I agree	21 Neutral	4 I slightly disagree	7 I totally disagree
<b>11) The PeLe software takes to much time from ordinary lectures</b>				
8 I totally agree	17 I agree	28 Neutral	27 I slightly disagree	9 I totally disagree
<b>12) I can't see the benefits of PeLe and prefer to use ordinary tests</b>				
9 I totally agree	13 I agree	33 Neutral	15 I slightly disagree	19 I totally disagree

## CONCLUSION

- We tested 73 female and 16 male students in autumn of 2012 and spring of 2013.
- A majority agreed that PeLe was a Good way of conducting multichoice testing.
- A clear majority of students thought that the PeLe software did not take too much time from the ordinary lectures and clearly saw benefits from the system. Since you had to answer negatively (I slightly disagree and I totally disagree) in order to express your appreciation of the system, those answers show how positive the students in general were to the system and that they took the survey seriously.
- We could from the surveys conclude that the students that we tested in general was not accustomed to Metometers systems and Student response systems especially among the material testing classes. More of the students in Nursing and history classes was accustomed to SRS probably because we had used SRS in some of the history classes previously. SRS is a student response system that is developed by Hist.
- In spite of not being used to metometersystems and SRS the students was positive to using the systems in tests especially among the material testers. From the interviews we conducted with the material testers in Yrkesakademien they thought that multichoice questions and PeLe software was well suited for the subject of Material testing.
- The students found the student interface intuitive although they in many cases didn't have any previous experience with student response system
- In general both the material testing student and the students from history and nursing thought that it was that it was easy or quite easy to log in to the system.

Given that you have to type in loggin, password and session and that many of the students was adults that did not have that much expericence with smartphones and tuchscreens that was a very good result.

-The students also in general thougt that it was easy or quite easy to answer the questions with the PeLe software. The material testers were more positive than the students from the history and nursing courses and a explanation for this could be that in nursing we had some questions with many possible answers so that all the answers did not fit into the screen and the students had to scroll down to answer those. But inspite of that the students thougt that it was easy to answer questions.

- The students in general thougt that it was easy to navigate between questions to answer either by scrolling left or right or tuching the appopriate number at the bottom of the screen.

-The students thougt that it was easy or quite easy to submitt the test. In general the history and nursing students think that it is more easy to submit tests. The process of submitting questions involves two stepps first you end the test and review your answers and then you submit the answers a final time and you have to type in YES so that you don't submit your test by mistake. In spite of the two steps you have to do to submit your test a majority of students thinks it is easy both in the material testing classes and in the history and nursing classes.

- The students both in material testing and in the nursing and history classes thinks that multichoice questions is a Good way to answer questions. The material testers we interviewed in connection with the tests at Yrkesakademin thougt that it was especially Good for emmigrants with their limited knowledge in Swedish.

- The student in general thougt that multichoice questions adequately measure the students knowledge. Students we interviewed in nursing classes thougt that it must be complemented with essay questions and that also showed in written answers from the history students we surveyed after they had conducted PeLe tests. So I think that multichoice questions works well in some courses such as Material testing and less so in courses such as History although they are a Good complement.

- In general the student was very positive to PeLe for grading. From interviews and written answers from the surveys students expressed a feeling that they was very positive to PeLe for grading since it was quick, fair and transparent for students. The students could have a quick feedback on what was correct and what was incorrect in the test.

## 5 Experiences obtained when using SRS Peer Learning Assessment Service (PeLe) system in material tester courses in Romania

### COURSE EVALUATION IN ROMANIA

For the first time the PeLe methodology for training of mechanical engineers was done for a course over a period of 4 weeks at UPM January 2012. Students' feedbacks (Table 1) on the system were collected from a survey given at the end of the test period. A selection of the results obtained from 30 students is displayed in table 1: number of participants: 30; male: 23; female: 7.

*Table 1. Responses obtained in a survey from the material testing courses that used the PeLe. The numbers represent number of students selecting that alternative.*

1) My first impression of the Peer Learning Assessment Software (PeLe) is:				
3 - Excellent	21 - Very good	6 - Satisfactory	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad
2) Its fun to attend testing where the PeLe is used?				
4 - I totally agree	23 - I agree	3 - Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel asleep
3) What voting device did you use?				
7 - i Pod provided by teacher	5 - Private i Pod	3 - Private cell phone	15 - PC	<input type="checkbox"/> Other device
4) It was easy to use the voting device:				
8 - I totally agree	21 - I agree	1 - Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> I totally disagree
5) How was the introduction of the PeLe, before you used it during the demonstration?				
3 - Excellent	23 - Very good	4 - Satisfactory	<input type="checkbox"/> Slightly insufficient	<input type="checkbox"/> Insufficient
6) Are you conformable with the log-in system?				
8 - Very comfortable	4 - Slightly comfortable	18 - Comfortable	<input type="checkbox"/> Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
7) Are you comfortable with the PeLe system interface?				
5 - Very comfortable	8 - Slightly comfortable	15 - Comfortable	<input type="checkbox"/> 2 - Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
8) Are you after this training session comfortable with using the PeLe system?				
6 - Very comfortable	11 - Slightly comfortable	13 - Comfortable	<input type="checkbox"/> Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?				
4 - Excellent	19 - Very good	7 - Satisfactory	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad

<i>10) I prefer to revoke the questions that were most problematic for the class?</i>				
<b>3 - I totally agree</b>	<b>16 - I agree</b>	<b>11 - Neutral</b>	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>11) By using PeLe I had a chance to learn from the mistakes:</i>				
<b>5 - I totally agree</b>	<b>18 - I agree</b>	<b>7 - Neutral</b>	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>12) By using PeLe I had a chance to learn from peers:</i>				
<b>6 - I totally agree</b>	<b>19 - I agree</b>	<b>5 - Neutral</b>	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<i>13) How would you grade the importance of the teacher spending time on explaining whether the alternatives are right or wrong, and why?</i>				
<b>4 - Extremely important</b>	<b>21 - Important</b>	<b>5 - Neutral</b>	<input type="checkbox"/> Not that important	<input type="checkbox"/> Waste of time
<i>14) To what extent do you feel that the PeLe engage and activate you during evaluation?</i>				
<b>3 - Very large</b>	<b>20 - Large</b>	<b>7 - Neutral</b>	<input type="checkbox"/> Small	<input type="checkbox"/> Poor
<i>15) To what extent do you think the PeLe can aid students learning of the course curriculum?</i>				
<b>2 - Very large</b>	<b>20 - Large</b>	<b>7 - Neutral</b>	<b>1 - Small</b>	<input type="checkbox"/> Poor
<i>16) PeLe should be used in all classes/lectures</i>				
<b>6 - I totally agree</b>	<b>19 - I agree</b>	<b>4 - Neutral</b>	<b>1 - I slightly disagree</b>	<input type="checkbox"/> I totally disagree
<i>17) To what extent you consider the 2D and 3D illustrations help understanding the theoretical problem/assessment question</i>				
<b>19 - I totally agree</b>	<b>10 - I agree</b>	<b>1 - Neutral</b>	<input type="checkbox"/> - I slightly disagree	<input type="checkbox"/> I totally disagree
<i>18) The 2D and 3D illustrations facilitate peer learning/assessment processes</i>				
<b>21 - I totally agree</b>	<b>9 - I agree</b>	<input type="checkbox"/> - Neutral	<input type="checkbox"/> - I slightly disagree	<input type="checkbox"/> I totally disagree

The second testing of PeLe for mobile devices was done over a period of 4 weeks in June 2012 in material testing courses. Students' feedbacks on the system were collected from a survey given at the end of the test period.

Number of participants: 17

Male: 11

Female: 6

Period of evaluation: June 2012

*Table 2. Responses obtained in a survey from the MT courses that used the Pele. The numbers represent number of students selecting that alternative.*

<b>1) My first impression of the Peer Learning Assessment Software (PeLe) is:</b>				
<b>3 - Excellent</b>	<b>9 - Very good</b>	<b>5 - Satisfactory</b>	<input type="checkbox"/> Not very good	<input type="checkbox"/> Bad
<b>2) Its fun to attend testing where the PeLe is used?</b>				
<b>3 - I totally agree</b>	<b>9 - I agree</b>	<b>4 - Neutral</b>	<b>1- I slightly disagree</b>	<input type="checkbox"/> Sorry I feel asleep
<b>3) What voting device did you use?</b>				
<b>8 - I Pod provided by teacher</b>	<b>0 - Private I Pod</b>	<b>0 - Private cell phone</b>	<b>9 - PC</b>	<input type="checkbox"/> Other device

<b>4) It was easy to use the voting device:</b>				
4 - I totally agree	9 - I agree	3 - Neutral	1- I slightly disagree	<input type="checkbox"/> I totally disagree
<b>5) How was the introduction of the PeLe, before you used it during the demonstration?</b>				
2 - Excellent	6 - Very good	8 - Satisfactory	1- Slightly insufficient	<input type="checkbox"/> Insufficient
<b>6) Are you conformable with the log-in system?</b>				
2 - Very comfortable	5 - Slightly comfortable	5 - Comfortable	5- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>7) Are you comfortable with the PeLe system interface?</b>				
5 - Very comfortable	5 - Slightly comfortable	4 - Comfortable	3 - Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>8) Are you after this training session comfortable with using the PeLe system?</b>				
5 - Very comfortable	7 - Slightly comfortable	4 - Comfortable	1- Slightly uncomfortable	<input type="checkbox"/> Very Uncomfortable
<b>9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?</b>				
2 - Excellent	6 - Very good	6 - Satisfactory	3- Not very good	<input type="checkbox"/> Bad
<b>10) I prefer to revote the questions that were most problematic for the class?</b>				
5 - I totally agree	10 - I agree	2 - Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<b>11) By using PeLe I had a chance to learn from the mistakes:</b>				
4 - I totally agree	8 - I agree	5 - Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<b>12) By using PeLe I had a chance to learn from peers:</b>				
5 - I totally agree	8 - I agree	4 - Neutral	<input type="checkbox"/> I slightly disagree	<input type="checkbox"/> Sorry I feel Asleep .....
<b>13) How would you grade the importance of the teacher spending time on explaining whether the alternatives are right or wrong, and why?</b>				
6 - Extremely important	9 - Important	2 - Neutral	<input type="checkbox"/> Not that important	<input type="checkbox"/> Waste of time
<b>14) To what extent do you feel that the PeLe engage and activate you during evaluation?</b>				
5 - Very large	8 - Large	4 - Neutral	<input type="checkbox"/> Small	<input type="checkbox"/> Poor
<b>15) To what extent do you think the PeLe can aid students learning of the course curriculum?</b>				
6 - Very large	7 - Large	3 - Neutral	1 - Small	<input type="checkbox"/> Poor
<b>16) PeLe should be used in all classes/lectures</b>				
4 - I totally agree	8 - I agree	4 - Neutral	1 - I slightly disagree	<input type="checkbox"/> I totally disagree
<b>17) To what extent you consider the 2D and 3D illustrations help understanding the theoretical problem/assessment question</b>				
14 - I totally agree	3 - I agree	<input type="checkbox"/> - Neutral	<input type="checkbox"/> - I slightly disagree	<input type="checkbox"/> I totally disagree
<b>18) The 2D and 3D illustrations facilitate peer learning/assessment processes</b>				
11 - I totally agree	6 - I agree	<input type="checkbox"/> - Neutral	<input type="checkbox"/> - I slightly disagree	<input type="checkbox"/> I totally disagree

The third testing and final employment of PeLe for mobile devices was done in first semester of the academic year 2012-2013 in the interval October 2012 – February 2013, in the material testing courses, with the following syllabus:

### Advanced Materials

Module number	Lesso n numb	Title
<b>1</b>		<b>Stainless steel</b>
	1	What is stainless steel?
	2	Corrosion resistance of stainless steel
<b>2</b>		<b>Ceramic materials</b>
	1	Knowledge of ceramic materials
	2	Types of technical ceramics
<b>3</b>		<b>Technical ceramics uses</b>
	1	Ceramic materials used in electrical engineering and transport
	2	Industrial applications of technical ceramics
<b>4</b>		<b>Plastics</b>
	1	Plastics, Generalities. Thermoplastics
	2	Thermosetting materials. Application of plastics
<b>5</b>		<b>Smart materials. Shape memory materials</b>
	1	Phenomenological bases of shape memory
	2	Shape memory effects. Obtaining memory alloys
<b>6</b>		<b>Smart materials. Applications of shape memory materials</b>
	1	Free recovery applications, the return forfeit pseudoelectrics and medical
	2	Applications to the generation of mechanical work
<b>7</b>		<b>Smart materials. Electro - magnetic strict rheological, piezoelectric, design</b>
	1	Electro and magnetostrictive materials. Electronic materials and magnetoreological
	2	Piezoelectric materials. Smart materials design

The syllabus has been studied in the first semester of the academic year 2012-2013, and several tests by employment of PeLe were provided after each module, counting as small partial exams. The subjects of testing during semester are:

**Test no. 1:** Stainless steel

**Test no. 2:** Ceramic materials

**Test no. 3:** Technical ceramics uses

**Test no. 4:** Plastics

**Test no. 5:** Smart materials. Shape memory materials

**Test no. 6:** Smart materials. Applications of shape memory materials

**Test no. 7:** Smart materials. Electro - magnetic strict rheological, piezoelectric, design

Considering the moment of evaluation these test are appreciated as formative evaluation by monitoring continuously students learning through ongoing feedback.

Tests during the semester are specified in the schedule of discipline in accordance with instructions provided by the teacher at the beginning of the course.

The final test conducted at the end of the course is appreciated as summative evaluation.

In "Petru Maior" University of Tîrgu Mureș, the PeLe evaluation model is used in combination with state of the art video adapted e-learning solutions. The first testing of PeLe for mobile devices was done over a period of 4 weeks in June 2012 in engineering courses. Students' feedbacks on the system were collected from a survey given at the end of the test period. A selection of the results obtained from 97 students appreciates that:

Q1) My first impression of the Peer Learning Assessment Software (PeLe) is: Excellent (17); Very good (49); Satisfactory (29); Not very good (2); Bad (0);

Q2) It is fun to attend testing where the PeLe is used?:  
I totally agree (19); I agree (52); Neutral (21); I slightly disagree (5); Sorry I feel asleep (0);

Q3) What voting device did you use?:  
i Pod provided by teacher (39); Private i Pod (7); Private cell Phone (17); PC (33); Other device (1) - laptop;

Q4) It was easy to use the voting device:  
I totally agree (46); I agree (32); Neutral (15); I slightly disagree (4); I totally disagree (0);

Q5) How was the introduction of the PeLe, before you used it during the demonstration?:  
Excellent (24); Very good (42); Satisfactory (29); Slightly insufficient (2); Insufficient (0);

Q6) Are you conformable with the log-in system?: Very comfortable (27); Slightly comfortable (25); Comfortable (38); Slightly uncomfortable (7); Very uncomfortable (0);

Q7) Are you comfortable with the PeLe system interface?:  
Very comfortable (29); Slightly comfortable (34); Comfortable (27); Slightly uncomfortable (7); Very uncomfortable (0);

Q8) Are you after this training session comfortable with using the PeLe system?:  
Very comfortable (31); Slightly comfortable (36); Comfortable (25); Slightly uncomfortable (5); Very uncomfortable (0);

Q9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?:

Excellent (28); Very good (38); Satisfactory (22); Not very good (7); Bad (2);

Q10) I prefer to revoke the questions that were most problematic for the class?: I totally agree (54); I agree (34); Neutral (7); I slightly disagree (2); I totally disagree (0);

Q11) By using PeLe I had a chance to learn from the mistakes:

I totally agree (37); I agree (45); Neutral (9); I slightly disagree (6); I totally disagree (0);

Q12) By using PeLe I had a chance to learn from peers:

I totally agree (33); I agree (48); Neutral (15); I slightly disagree (1); I totally disagree (0);

Q13) How would you grade the importance of the teacher spending time on explaining whether the alternatives are right or wrong, and why?:

Extremely important (59); Important (32); Neutral (4); Not that important (2); Waste of time (0);

Q14) To what extent do you feel that the PeLe engages and activate you during evaluation?:

Very large (31); Large (43); Neutral (14); Small (7); Poor (2);

Q15) To what extent do you think the PeLe can aid students learning of the course curriculum?:

Very large (32); Large (41); Neutral (15); Small (9); Poor (0);

Q16) PeLe should be used in all classes/lectures:

I totally agree (39); I agree (42); Neutral (11); I slightly disagree (5); I totally disagree (0).

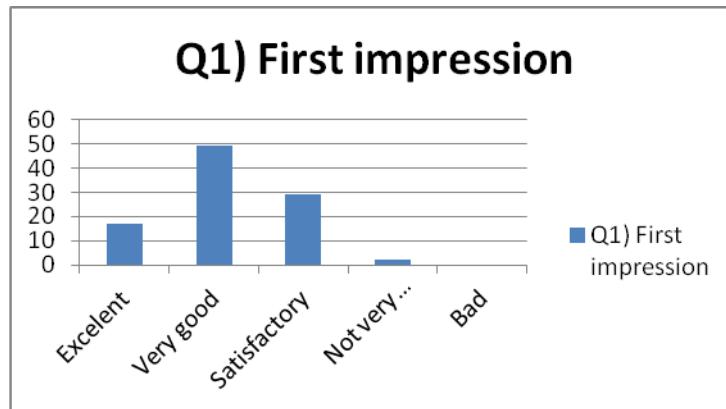
Q17) To what extent you consider the 2D and 3D illustrations help understanding the theoretical problem/assessment question

I totally agree (54); I agree (42); Neutral (1); I slightly disagree (0); I totally disagree (0).

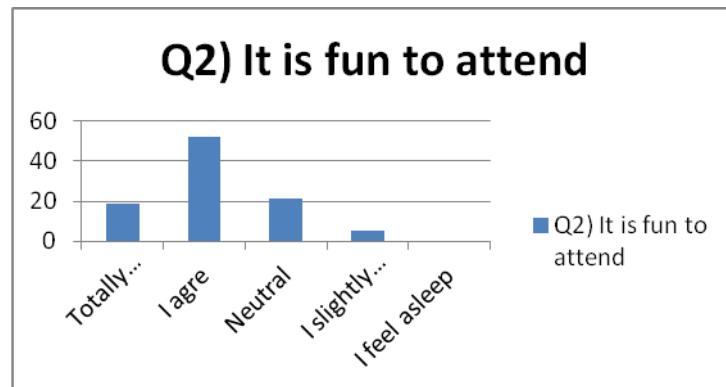
Q18) The 2D and 3D illustrations facilitate peer learning/assessment processes

I totally agree (59); I agree (38); Neutral (0); I slightly disagree (0); I totally disagree (0).

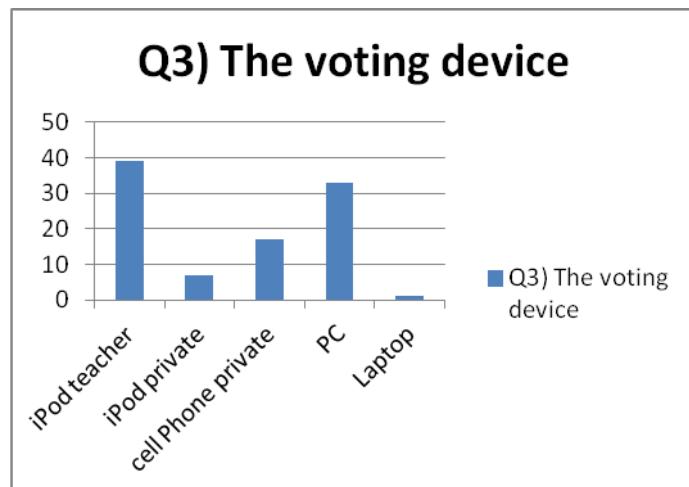
Q1) My first impression of the Peer Learning Assessment Software (PeLe) is:  
Excellent (17); Very good (49); Satisfactory (29); Not very good (2); Bad (0);



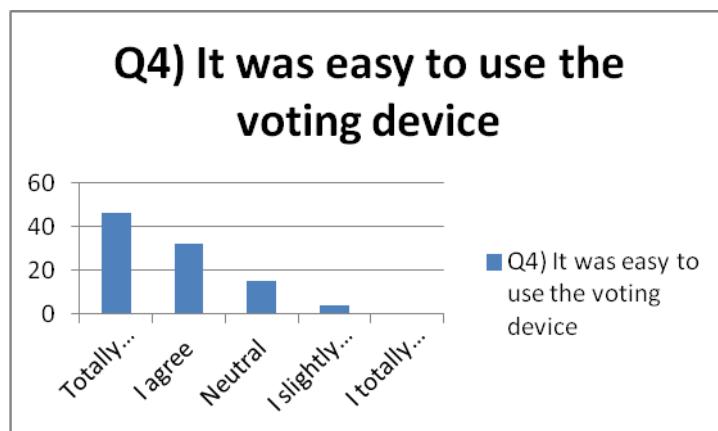
Q2) *It is fun to attend testing where the PeLe is used?*: I totally agree (19); I agree (52); Neutral (21); I slightly disagree (5); Sorry I feel asleep (0);



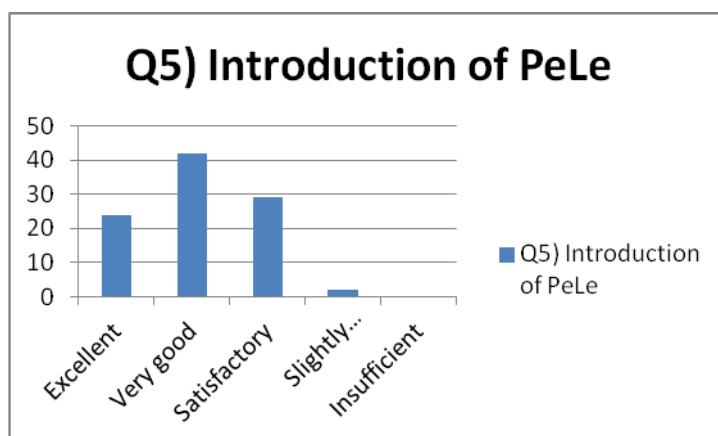
Q3) *What voting device did you use?*: i Pod provided by teacher (39); Private i Pod (7); Private cell Phone (17); PC (33); Other device (1) - laptop;



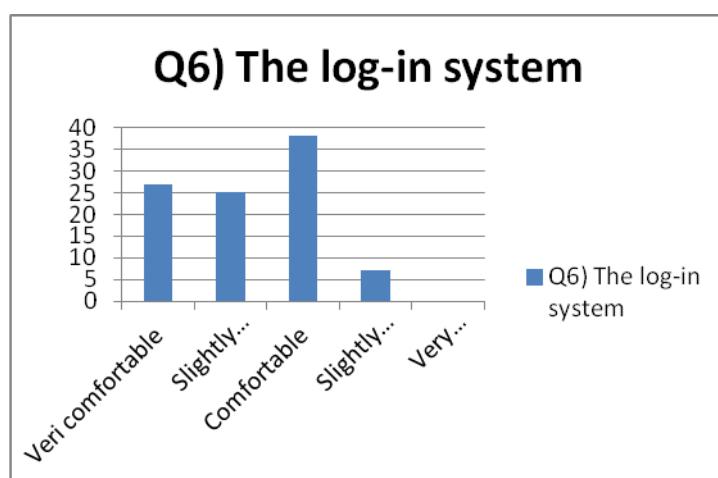
Q4) *It was easy to use the voting device*: I totally agree (46); I agree (32); Neutral (15); I slightly disagree (4); I totally disagree (0);



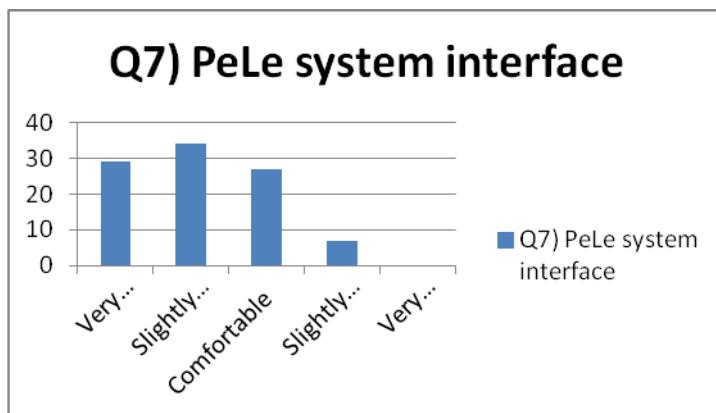
Q5) *How was the introduction of the PeLe, before you used it during the demonstration?*: Excellent (24); Very good (42); Satisfactory (29); Slightly insufficient (2); Insufficient (0);



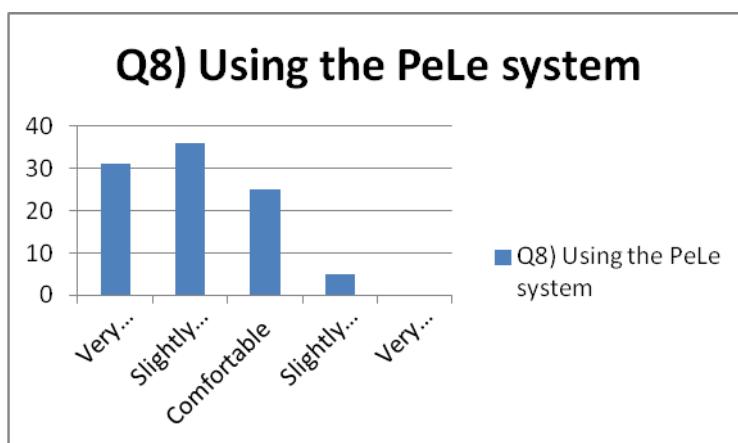
Q6) *Are you conformable with the log-in system?*: Very comfortable (27); Slightly comfortable (25); Comfortable (38); Slightly uncomfortable (7); Very uncomfortable (0);



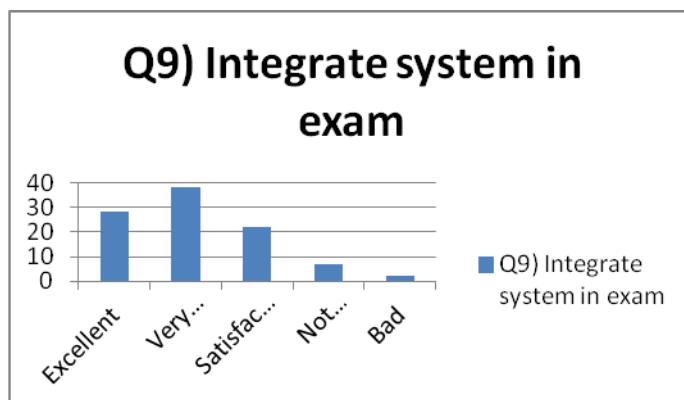
Q7) Are you comfortable with the PeLe system interface?: Very comfortable (29); Slightly comfortable (34); Comfortable (27); Slightly uncomfortable (7); Very uncomfortable (0);



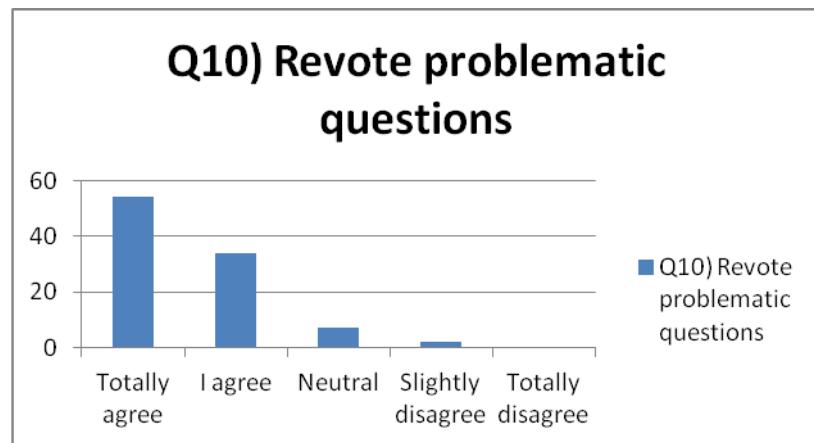
Q8) Are you after this training session comfortable with using the PeLe system?: Very comfortable (31); Slightly comfortable (36); Comfortable (25); Slightly uncomfortable (5); Very uncomfortable (0);



Q9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?: Excellent (28); Very good (38); Satisfactory (22); Not very good (7); Bad (2);



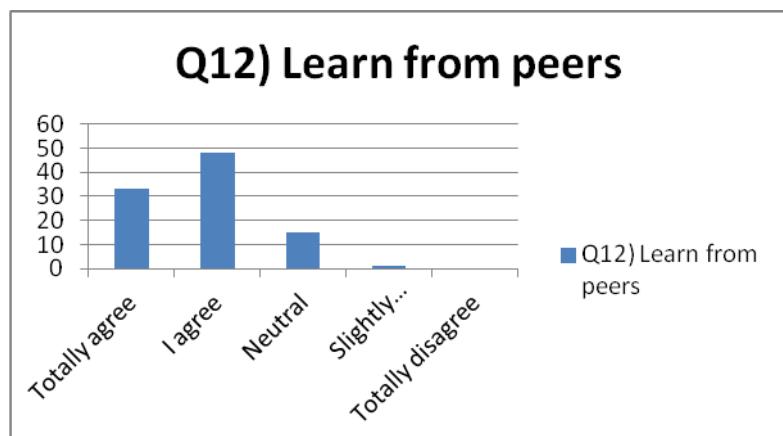
Q10) *I prefer to revoke the questions that were most problematic for the class?:* I totally agree (54); I agree (34); Neutral (7); I slightly disagree (2); I totally disagree (0);



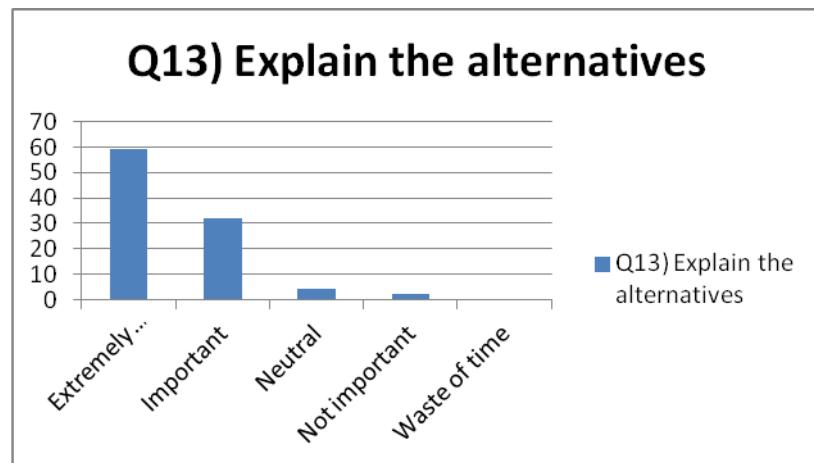
Q11) *By using PeLe I had a chance to learn from the mistakes:* I totally agree (37); I agree (45); Neutral (9); I slightly disagree (6); I totally disagree (0);



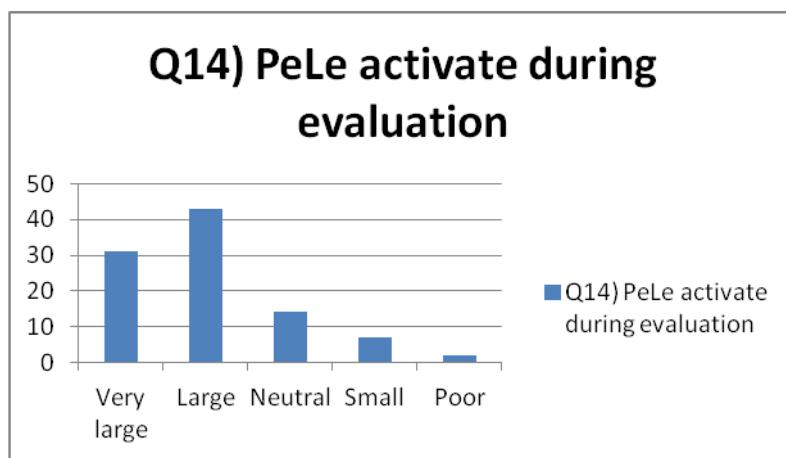
Q12) *By using PeLe I had a chance to learn from peers:* I totally agree (33); I agree (48); Neutral (15); I slightly disagree (1); I totally disagree (0);



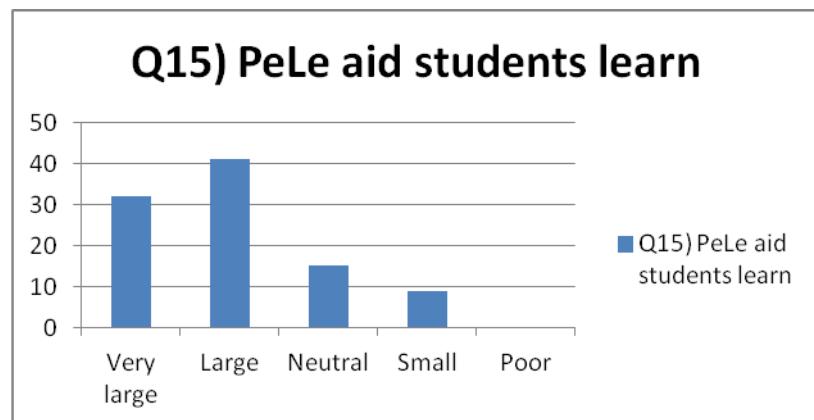
Q13) How would you grade the importance of the teacher spending time on explaining whether the alternatives are right or wrong, and why?: Extremely important (59); Important (32); Neutral (4); Not that important (2); Waste of time (0);



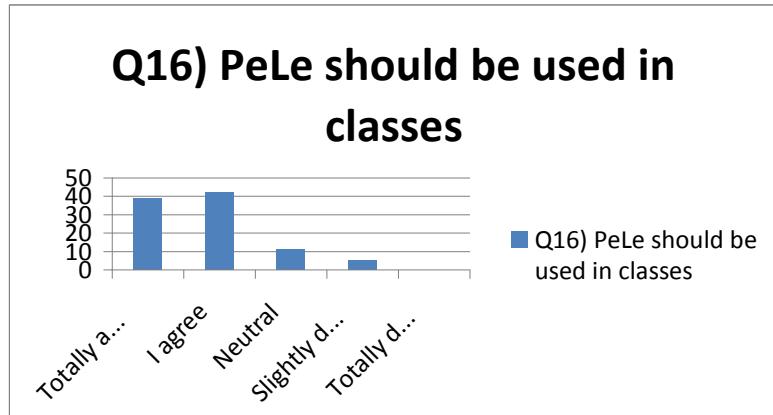
Q14) To what extent do you feel that the PeLe engages and activate you during evaluation?: Very large (31); Large (43); Neutral (14); Small (7); Poor (2);



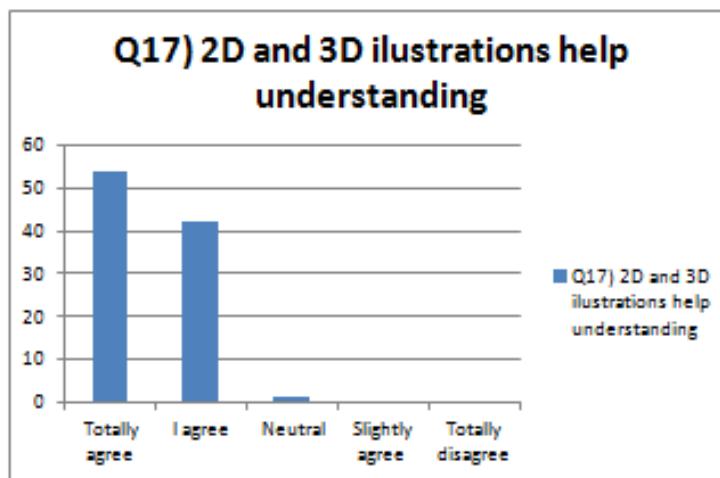
Q15) To what extent do you think the PeLe can aid students learning of the course curriculum?: Very large (32); Large (41); Neutral (15); Small (9); Poor (0);



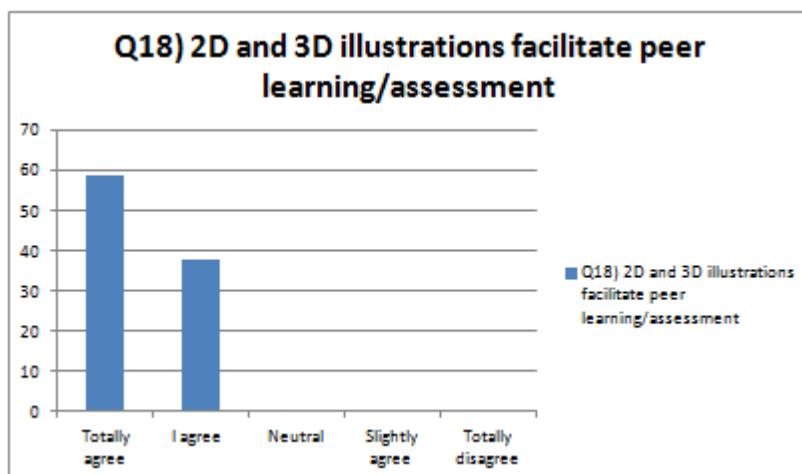
Q16) *PeLe should be used in all classes/lectures*: I totally agree (39); I agree (42); Neutral (11); I slightly disagree (5); I totally disagree (0).



Q17) *To what extent you consider the 2D and 3D illustrations help understanding the theoretical problem/assessment question*: I totally agree (54); I agree (42); Neutral (1); I slightly disagree (0); I totally disagree (0).



Q18) *The 2D and 3D illustrations facilitate peer learning/assessment processes*: I totally agree (59); I agree (38); Neutral (0); I slightly disagree (0); I totally disagree (0).



## **CONCLUSION**

As a conclusion, by interpreting questionnaires during pilot testing in Romania we appreciate that:

- The impression for using Peer Learning Assessment Software (PeLe) is very positive and students become fun to attend testing where this kind of evaluation is used;
- The students have used devices distributed by the teacher, own mobile phones or PC and it is necessary to have repetitive use of the method till they get experience to use any of the devices;
- The students feel comfortable to use the voting device because the information and communication technology is very possessed by the young generation;
- In the introductory phase of PeLe teachers have read the user manual to understand how to use the system, and how to log at the system, than have projected the Online Instructional videos that demonstrate how to: a) *Create teacher and student accounts on the PeLe assessment system* (3 minutes long); b) *Log on to the assessment services from students' mobile devices* (4 minutes long); c) *Use the PeLe (Peer Learning) Assessment Services for Smartphones, Pad's, iPod, PC and Mac* (the video contains 13 sections and is 11,5 minutes long). – These videos are available on the webpage of the project at <http://www.histproject.no/node/197>. These activity has leaded to a very good satisfaction for the introductory phase;
- The log into the system is mostly comfortable, but for some participants feel slightly uncomfortable due to the different type of browsers installed on the PC from the course room and the fact that PeLe cannot be accessed on each type of browser;
- The PeLe interface is comfortable for most of the students but can be improved to be more intuitive, because there are situations where students feel uncomfortable;
- There is a migration to better appreciation from question 7 to question 8, respectively from the first impression to using PeLe, because students become more familiar with the system after at least one testing;
- In general students accept to use the system as part of the exam, but there are also cases when they feel confused. We consider it is necessary to use the system at least 2-3 times till final exams until most of the students become comfortable with PeLe. Some of the students feel that have to fight with technology, which is another stress augmented to the stress of the exam;
- The system offer students the chance to revote problematic questions but also to learn from own mistakes and from peers;
- It is important that the teacher to explain what are the correct alternatives of the questions, which is the cognitive part of the methodology, helping students to learn the course curriculum;
- Students feel engaged and activated during evaluation by using PeLe and most of them would like to use in all classes;
- The distribution of the answers is normally according to the Gauss curve, so they can be accepted as real;
- The middle of the answers distribution is translated to the positive situations revealed by the questions, so the acceptance of the questionnaire is positive by the audience. In the implementation phase at UPM we have challenged with some problems that in some situation may become drawbacks of the evaluation system:
- Time spent to prepare relevant questions to the course is consuming resources. It depends also on the nature of the taught subject. The evaluation system is most

suitable for descriptive sciences, and less for exact sciences. The teacher has to appreciate what kind of questions to ask: factual or conceptual questions. He has to read up on existing articles on multiple-choice questions. We appreciate that in general is preferable to have multiple-choice questions;

- For questions projecting the teacher needs technology support (lap-top, projector, smart board, etc.), so the classroom has to be adequate;
- If the students do not have own Smartphone the teacher has to distribute mobile devices (clickers like iPods) and there is a time spent to distribute/receive it;
- There are some browsers that don't run properly the application;
- Not all the teachers allow the use of mobile phone in classes, because it can be a distraction;
- The new model for course delivery is supported by the ICT equipment with numerous benefits for both teachers and students, adding value for the teaching/assessment processes;
- The new model for course delivery and assessment, supported by the ICT equipment presenting materials characteristics and defects in 2D and 3D views, is largely accepted by students;
- The new model for course delivery and assessment, supported by the ICT equipment presenting materials characteristics and defects in 2D and 3D views, is largely accepted by students;
- The new innovative dimension of a test or an exam based up on using 2D or 3D multimedia material for illustration of defects within material testing, but also 3D reconstruction of defects, using non-destructive techniques, on which UPM extended the features of the Peer Learning Assessment Services, are largely accepted by students;
- The equipment purchased in the project and used in the material testing laboratory for presentation of materials characteristics and defects in 2D and 3D views helped at the successful implementation of the project in Romania, according to the specific teaching/assessment processes in material testing courses delivered by UPM.

## **6 Experiences obtained when using SRS Peer Learning Assessment Service (PeLe) syste in material tester courses in IZV (Slovenia).**

Conclusions from Slovenian evaluation questionnaires:

In Slovenia we have tested first PeLe system on Teach the teacher courses. On teach the teachers course there was 36 attendees on 7 meetings. We had interviewed all the teachers and examiners for accredited and notified courses in Slovenia.

Short conclusions were: From results we have produced inputs for development of tasks for the system and during the project we have tried to produce system that could satisfy wide scope of needs and not to be complicated for use for the teachers and students of wide variety of base IT knowledge. Main problem expressed was very short time for teach the users because of very short courses. Next problem was not always stable system if internet application was used. After development of an independent room system we have solved this problem and project with it. (Look Part A. of the tests)

In next stage we have interviewed Students and teachers in use on the courses for initial checking of the knowledge, pre exam testing and final exams. By SRS system, we have thought that we will have great problems with older professors from the universities, which was not the case. Greatest problem was by preparing proper questions for use of it so staff from Welding institute has to help it. Students on engineer level had not much problem with use and have lot of fun with it. Outputs were useful for optimization of the system.

At the end we have tested Pele for the certification process on line and with special wifi system installed on the exam room. Results were useful on final stage of the optimization of the Pele system for examination and maintain the exam questionnaires.

### ***Part A. IWE course (English / Slovenian)***

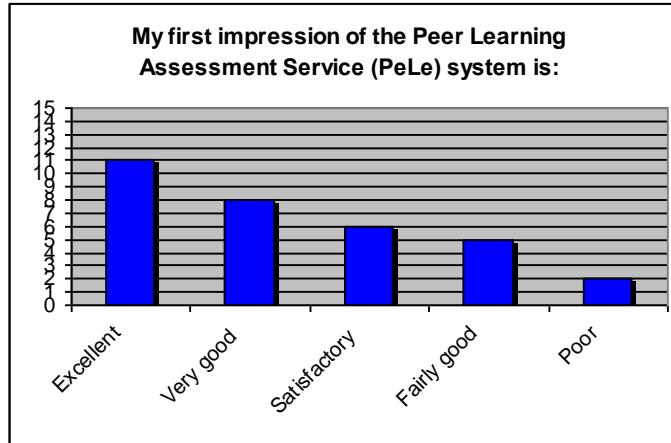
#### **1. Gender / spol**

- Male / Moški 32
- Female / Ženski 4

#### **2. Age: average 39**

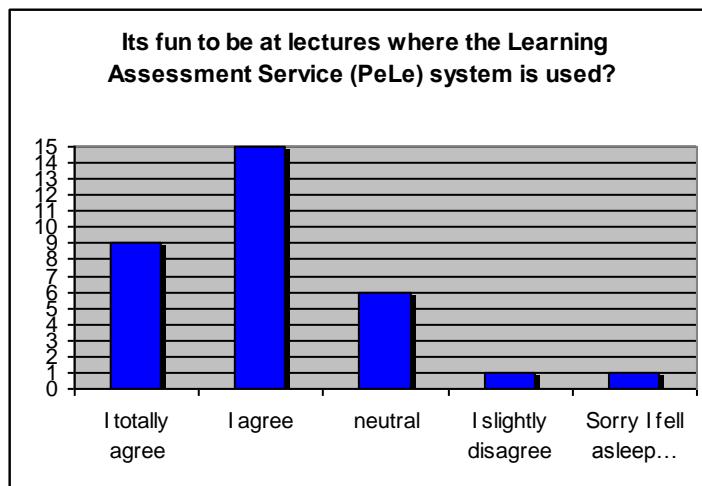
#### **3. My first impression of the Peer Learning Assessment Service (PeLe) system is;**

- Excellent
- Very good
- Satisfactory
- Not very good
- Bad



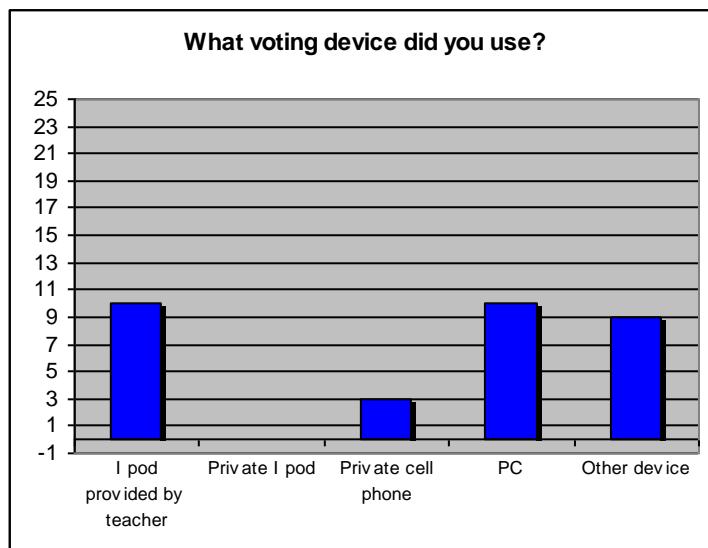
#### 4. Its fun to be at lectures where the Learning Assessment Service (PeLe) system is used?

- I totally agree
- I agree
- Neutral
- I slightly disagree
- Sorry, I fell asleep...



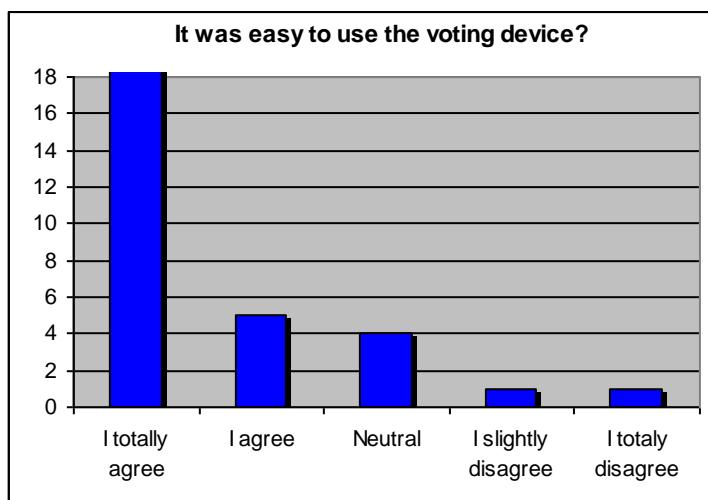
## 5. What voting device did you use?

- I Pod provided by teacher
- Private i Pod
- Private cell phone
- PC
- Other device



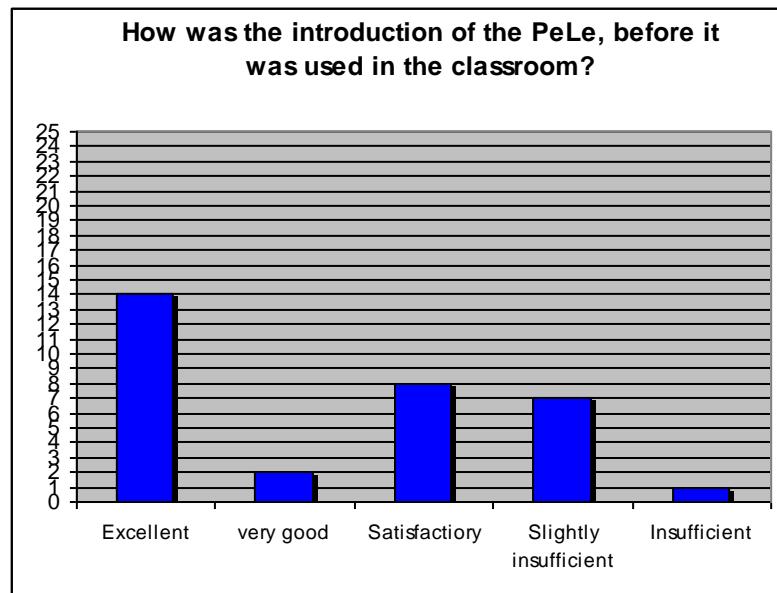
## 6. It was easy to use the voting device

- I totally agree
- I agree
- Neutral
- I slightly disagree
- I totally disagree



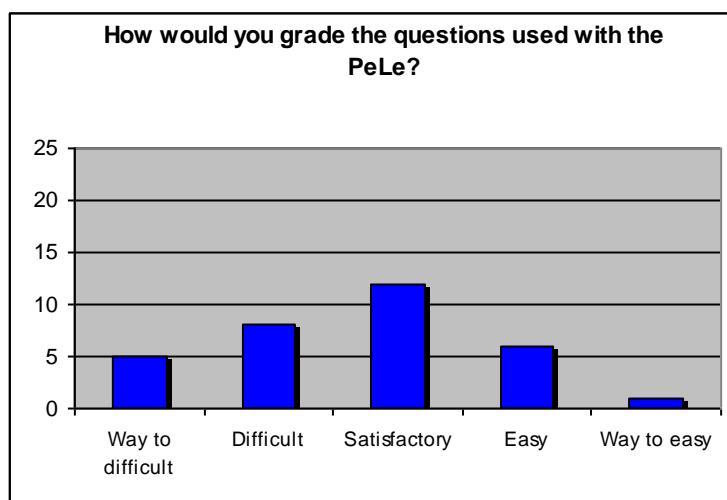
## 7. How was the introduction of the Learning Assessment Service (PeLe) system, before it was used in the classroom?

- Excellent
- Very good
- Satisfactory
- Slightly insufficient
- Insufficient



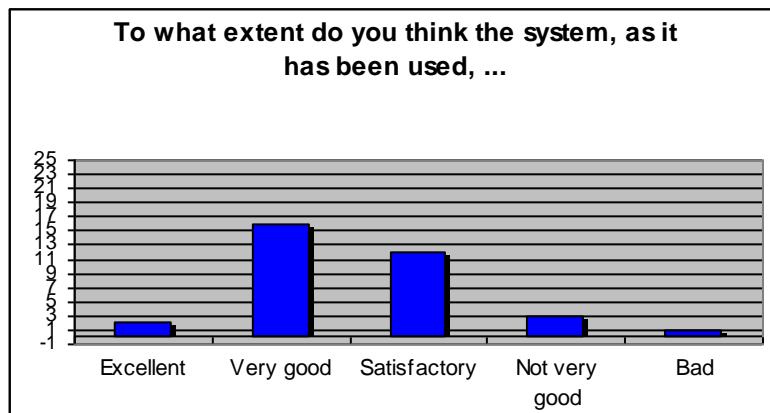
## 8. How would you grade the questions used with the Learning Assessment Service (PeLe) system?

- Way to difficult
- Difficult
- Satisfactory
- Easy
- Way to easy



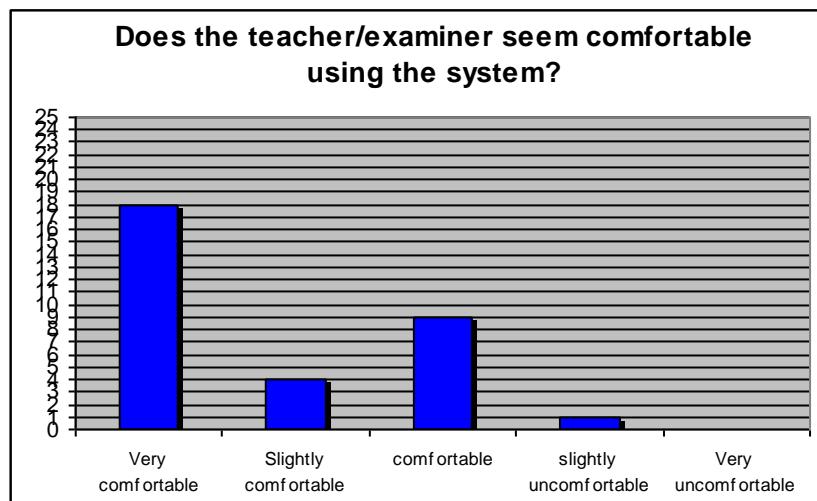
**9. To what extent do you think the system, as it has been used, integrate as a natural part of the training and certification session?**

- Excellent
- Very good
- Satisfactory
- Not very good
- Bad



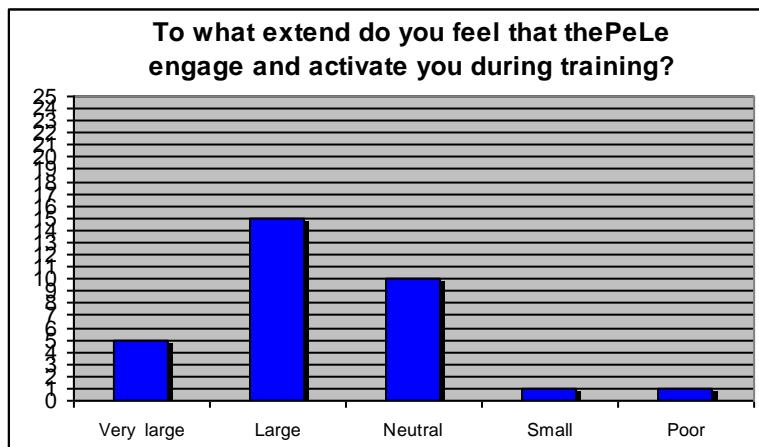
**10. Does the teacher/examiner seem comfortable using the system?**

- Very comfortable
- Slightly comfortable
- Comfortable
- Slightly uncomfortable
- Very uncomfortable



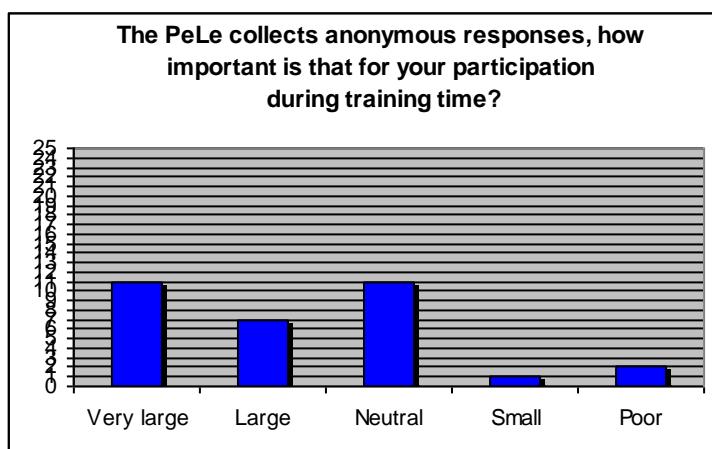
**11. To what extent do you feel that the Learning Assessment Service (PeLe) system engage and activate you during training and after exams?**

- Very large
- Large
- Neutral
- Small
- Poor



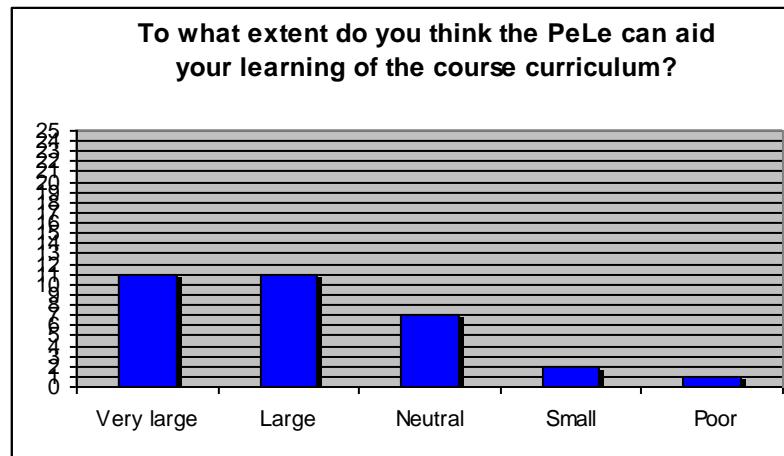
**12. The Learning Assessment Service (PeLe) system collects anonymous responses, how important is that for your participation during training time?**

- very large
- large
- neutral
- small
- poor



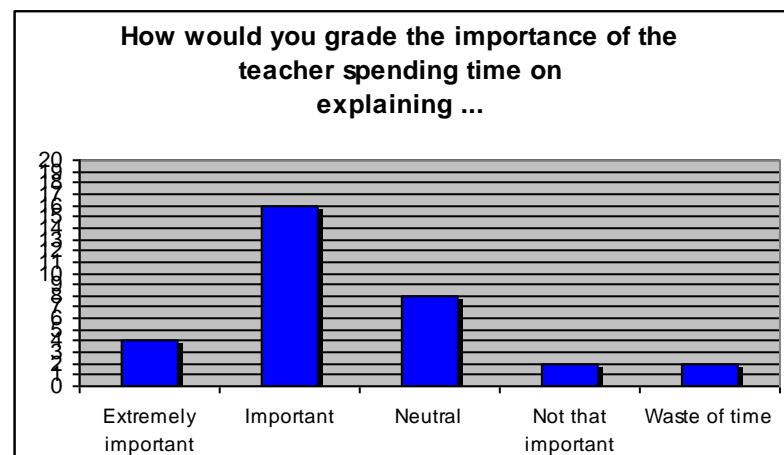
**14. To what extent do you think the Learning Assessment Service (PeLe) system can aid your learning of the course curriculum?**

- Very large
- Large
- Neutral
- Small
- Poor



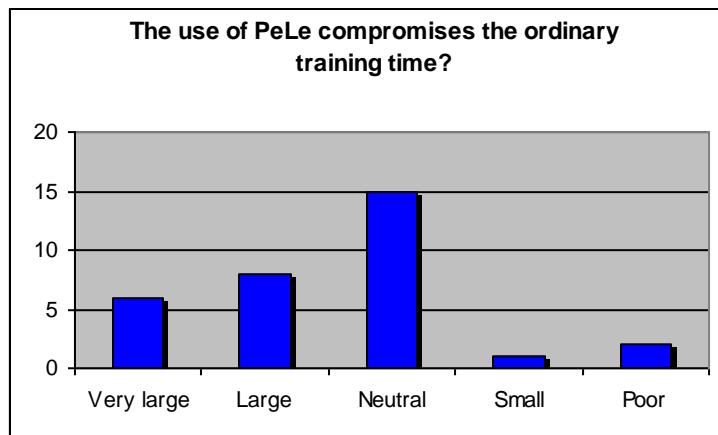
**15. How would you grade the importance of the examiner spending time on explaining whether the alternatives are right or wrong, and why?**

- Extremely important
- Important
- Neutral
- Not that important
- Waste of time



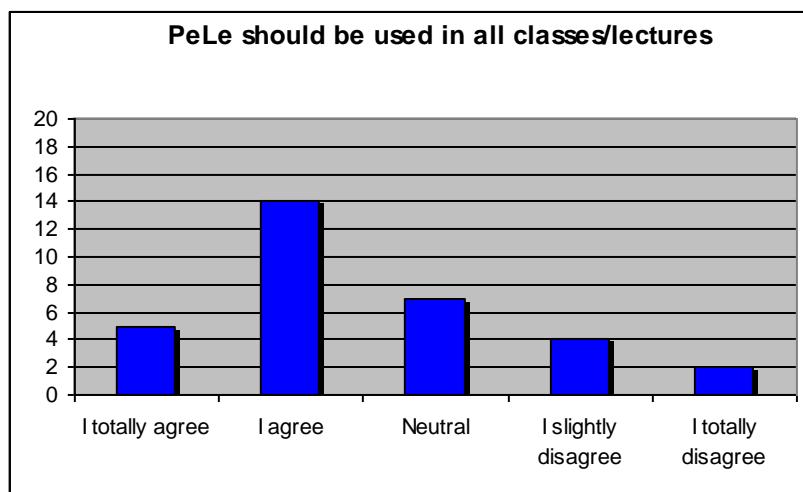
**16. The use of Learning Assessment Service (PeLe) system compromises the ordinary training time?**

- Very large
- Large
- Neutral
- Small
- Poor



### **17. Learning Assessment Service (PeLe) system should be used in all classes/lectures and exams.**

- I totally agree
- I agree
- Neutral
- I slightly disagree
- I totally disagree



### **18. Last but not least; do you have any tips/concrete advice for further use and development of the Learning Assessment Service (PeLe) system?**

Tips were collected and sent to PeLe developer team.

## **Part B**

**PeLe Evaluation in Ljubljana and Maribor Slovenia on material tester course during first evaluation of knowledment, pre certification exam and exam.**

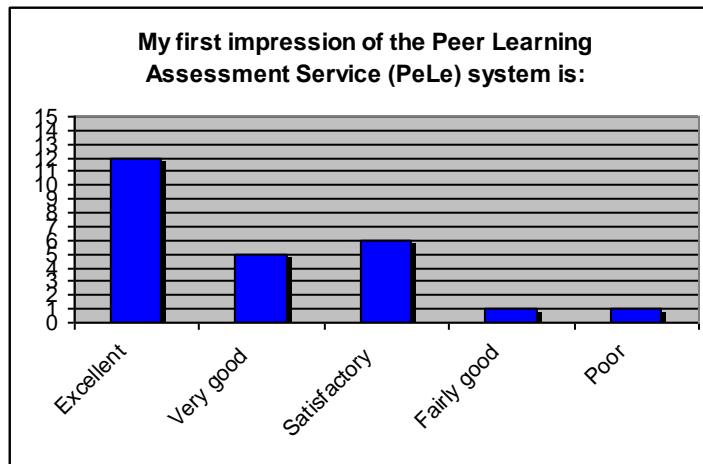
### **1. Gender / spol**

- Male / Moški 21
- Female / Ženski 4

### **2. Age: average 36**

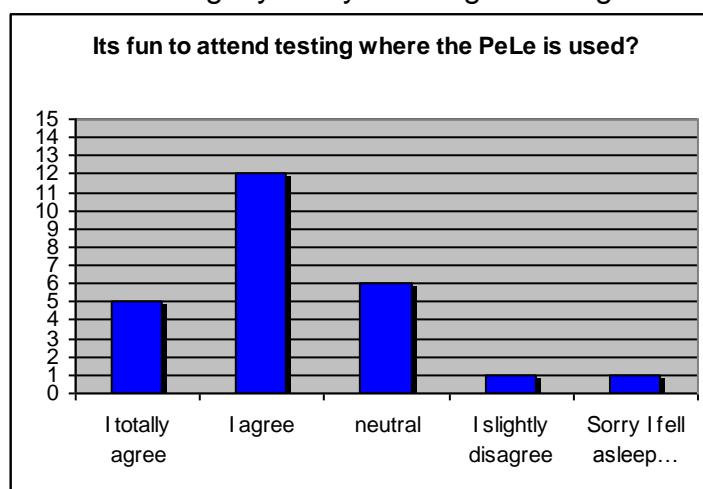
#### **1) My first impression of the Peer Learning Assessment Software (PeLe) is:**

- Excellent - Very good - Satisfactory Not very Bad good



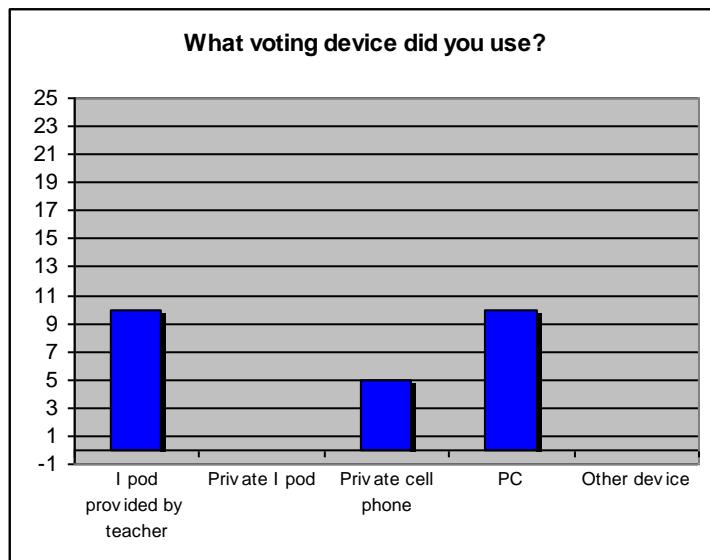
#### **2) Its fun to attend testing where the PeLe is used?**

- I totally agree - Neutral - I slightly Sorry I feel agree disagree asleep



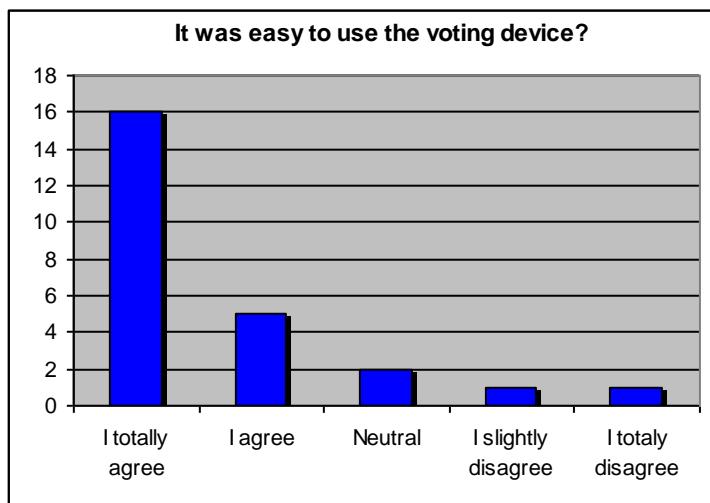
#### **3) What voting device did you use?**

- i Pod - Private i Private cell Other device provided Pod phone by teacher



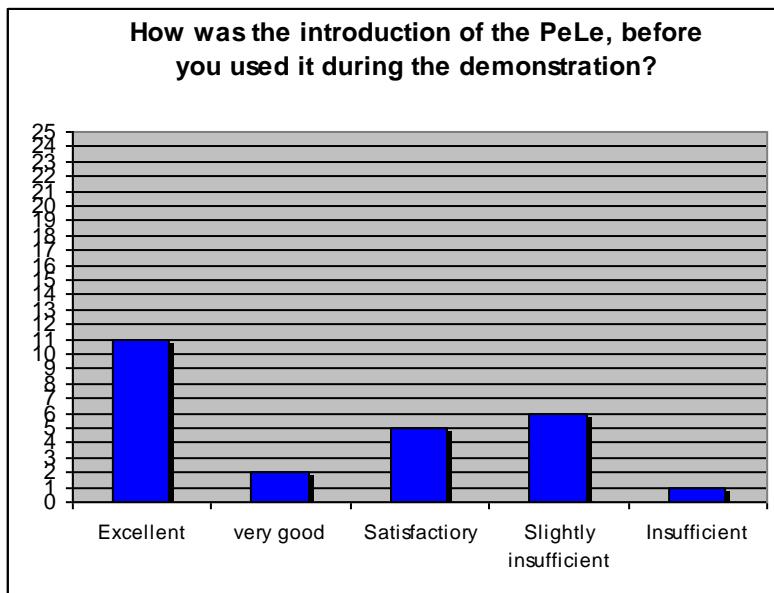
**4) It was easy to use the voting device:**

- I totally - I agree - Neutral - I slightly I totally disagree agree disagree



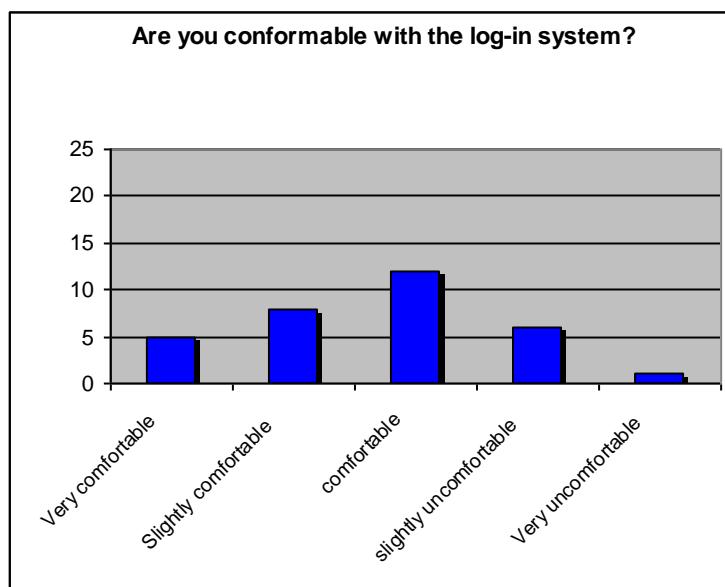
**5) How was the introduction of the PeLe, before you used it during the demonstration?**

- Excellent - Very good - Satisfactory - Slightly Insufficient insufficient



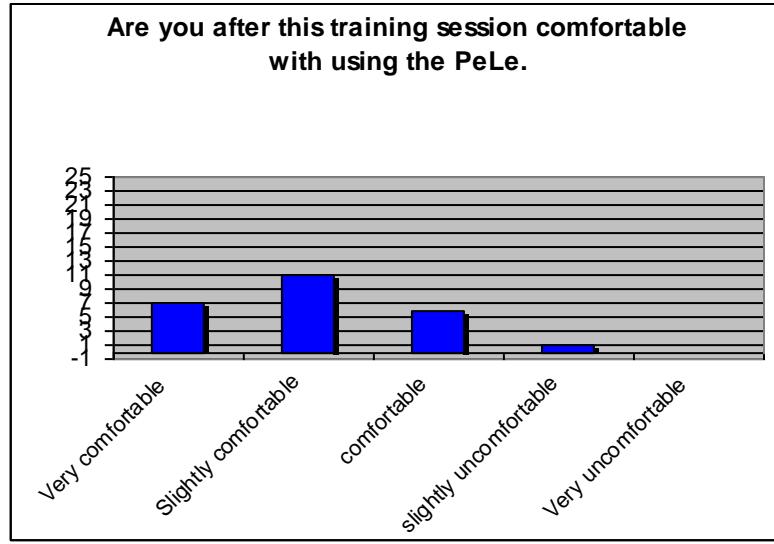
**6) Are you conformable with the log-in system?**

- Very - Slightly - Slightly Very comfortable comfortable Comfortable uncomfortable  
uncomfortable



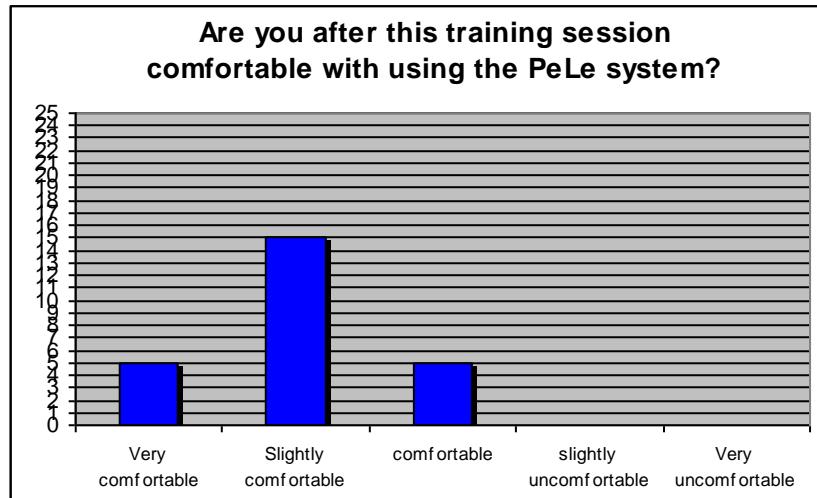
**7) Are you comfortable with the PeLe system interface?**

- Very - Slightly - Slightly Very comfortable comfortable Comfortable uncomfortable  
uncomfortable



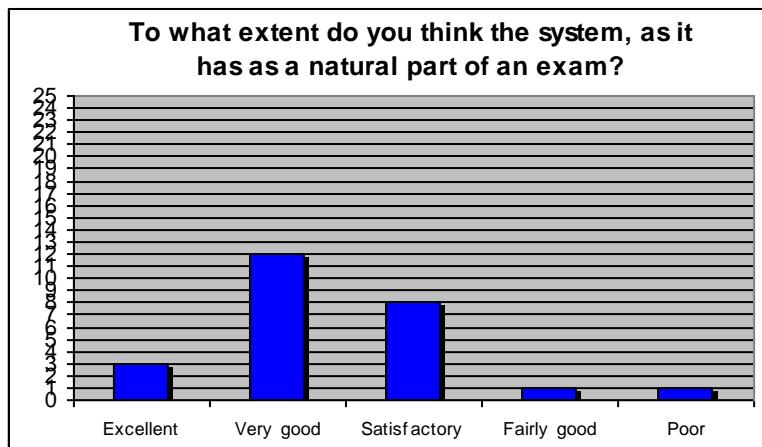
**8) Are you after this training session comfortable with using the PeLe system?**

- Very - Slightly - Slightly Very comfortable comfortable Comfortable uncomfortable uncomfortable



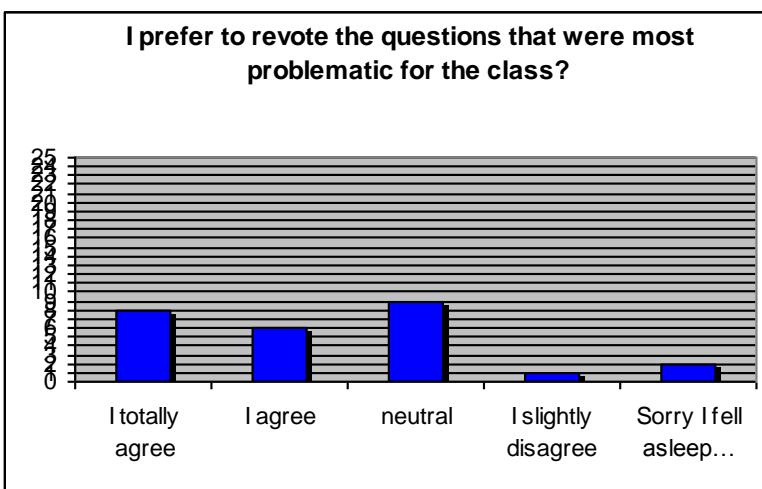
**9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?**

- Excellent - Very good - Satisfactory Not very Bad good



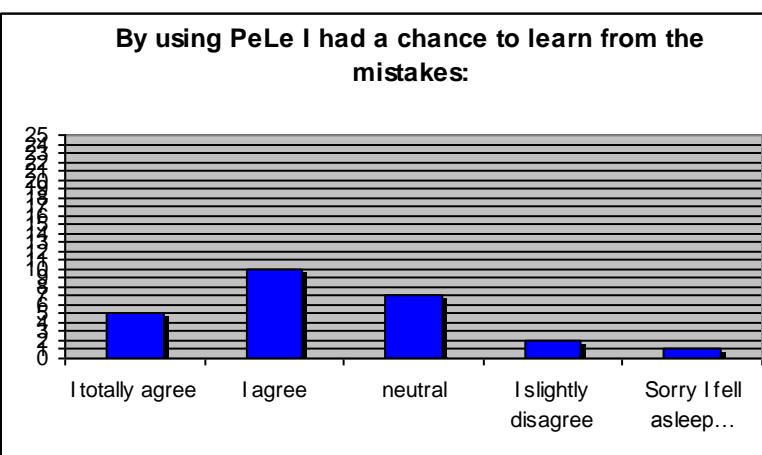
**10) I prefer to revoce the questions that were most problematic for the class?**

- I totally - I agree - Neutral - I slightly Sorry I feel agree disagree asleep



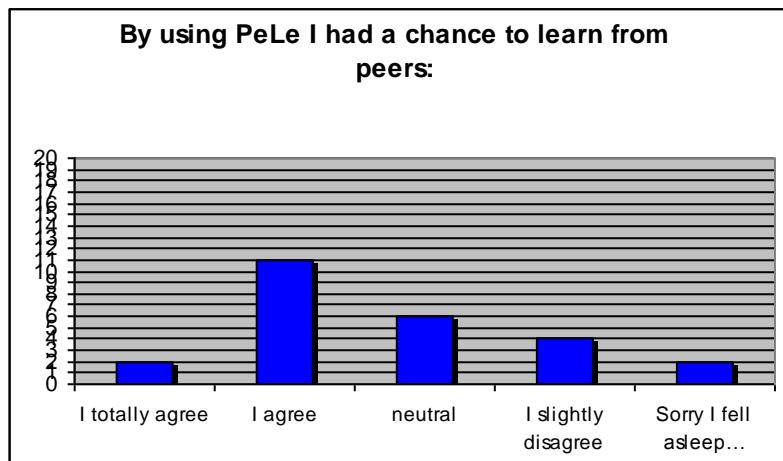
**11) By using PeLe I had a chance to learn from the mistakes:**

- I totally - I agree - Neutral I slightly Sorry I feel agree disagree asleep



**12) By using PeLe I had a chance to learn from peers:**

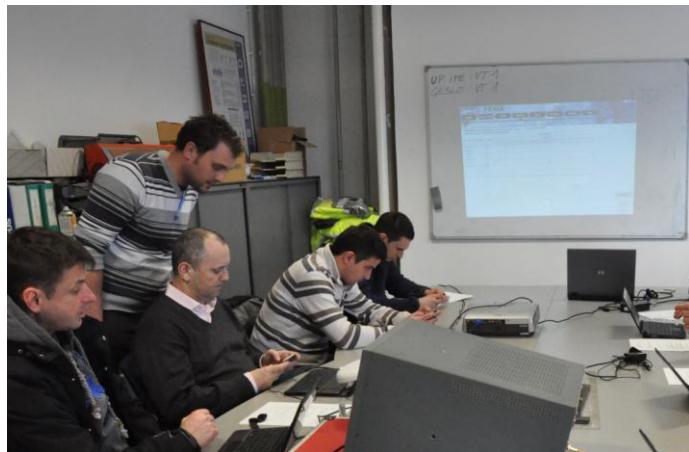
- I totally - I agree - Neutral I slightly Sorry I feel agree disagree asleep



### **Conclusions of Assessment in Slovenia**

The application was tested in the 6 courses of NDT personnel (material testers) and 7 teach the teachers sessions. Students were willing to cooperate, but at the beginning of the test we were faced with generation differences. The younger generations of candidates are obviously more susceptible to novelties in the field of technology while the older show fear at usage of new technologies and they are looking for paper or something tangible, because they are still convinced that this is the most reliable way.

During courses we tested the usage of private SmartPhones, tablets and laptops. We initially proposed candidates using their private SmartPhones and they were excited about this option because they are familiar with the functioning of their phones. But they soon began to complain that they have too small screens and the visibility is poor and lacks transparency. On the third course has even happened that the candidates have started to look for answers to questions over the internet, which means that they used an internet browser, and in this way try to cheat. However, it turned out to be a major problem that during the course has been interrupted an internet connection and we were not able to access the online server. Therefore, we then started using our own server (offline), which is for our use has become a necessity due to the aforementioned reasons.



Further testing was due to the different screen sizes of SmartPhones and consequent lack of transparency and the smaller fonts, replaced by the use of touch screen 7" Android Tablets and Netbooks. Older users still have problems with Tablets, because they are not accustomed to the use of the touch screens. According our experiences, it worked best the use of Netbooks. Since the majority of our candidates were elderly there were also those who are uncomfortable with computers, so the following things happened:

- Some candidates were in the middle of session due to unfamiliarity with computers accidentally closed the browser and thus the dialog bow with the exam – therefore, they had to start answering the exam questions again.
- An innovative way to answer the exam questions is encouraged candidate to further nervousness and discomfort – in consequence reduced concentration.
- Inferior end results of exams, though without additional testing we can not claim with certainty that the different approach is the reason, but this fact can be a real problem.

Teachers evaluated the PeLe system as user-friendly system, easy to use; they could lead the candidates through the assessment results and give feedback on the results. System and method is fast and cost-efficient.

## 7. Final Evaluation Report from MHTE (Hungary)

### PILOT TESTING IN HUNGARY

MHTE offer courses to the national market in the field of Material

Testing training. Target groups are mechanical engineers and also welding specialist. The role of MHTE is to test and use Pele in such courses, collect feedback from teachers and students that is used for continuous update of the software design for an easy and intuitive to use control interface for the 4 OS platforms for Smartphone's, as well as the air and flex control applications for digital blackboards.

For the first time the PeLe methodology for training of trainers was done for a course over a period of January 2012. Teachers' feedbacks on the system were collected from a survey given at the end of the test. A selection of the results obtained from 10 teachers is displayed in number of participants: 10

*Results Responses obtained in a survey from the train the trainer courses that used the Pele. The numbers represent number of teachers selecting that alternative.*

**1) My first impression of the Peer Learning Assessment Software (PeLe) is:**

1 - Excellent    6 Very good    3 Satisfactory    Not very good    Bad

**2) Its fun to attend testing where the PeLe is used?**

8 - I totally agree	2 I agree	Neutral	I slightly disagree	Sorry I feel asleep
---------------------	-----------	---------	---------------------	---------------------

**3) What voting device did you use?**

9- i Pod provided by MHTE	- Private i Pod	1 - Private cell phone	Other device
---------------------------	-----------------	------------------------	--------------

**4) It was easy to use the voting device:**

3 - I totally agree	4 - I agree	3- Neutral	I slightly disagree	I totally disagree
---------------------	-------------	------------	---------------------	--------------------

**5) How was the introduction of the PeLe, before you used it during the Demonstration?**

3 - Excellent	7-Very good	Satisfactory	Slightly insufficient
---------------	-------------	--------------	-----------------------

Insufficient

**6) Are you conformable with the log-in system?**

5 - Very comfortable	3 - Slightly comfortable	2 - Comfortable	Slightly uncomfortable	Very Uncomfortable
----------------------	--------------------------	-----------------	------------------------	--------------------

**7) Are you comfortable with the PeLe system interface?**

5 - Very comfortable	4 - Slightly comfortable	1 - Comfortable	Slightly uncomfortable	Very Uncomfortable
----------------------	--------------------------	-----------------	------------------------	--------------------

**8) Are you after this training session comfortable with using the PeLe system?**

6 - Very comfortable	3 - Slightly comfortable	1 - Comfortable	Slightly uncomfortable	Very Uncomfortable
----------------------	--------------------------	-----------------	------------------------	--------------------

**9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?**

5 - Excellent	2 - Very good	3 - Satisfactory	Not very good	Bad
---------------	---------------	------------------	---------------	-----

**10) I prefer to revoke the questions that were most problematic for the time?**

4 - I totally agree	4 - I agree	2 - Neutral	I slightly disagree	Sorry I feel Asleep...
---------------------	-------------	-------------	---------------------	------------------------



The student testing of PeLe for mobile devices was done over a period of February in 2012 in material testing courses and also in education exhibitions. Students' feedbacks on the system were collected from a survey given at the end of the test with the SRS technology.

Number of participants: over 200 students

Period of evaluation: to December 2012

Questionnaire: Responses obtained in a survey from the MT courses and other student courses that used the Pele.

The numbers represent percent of students selecting that alternative.

**1) My first impression of the Peer Learning Assessment Software (PeLe) is:**

60- Excellent    25- Very good    15 - Satisfactory    Not very good    Bad

**2) Its fun to attend testing where the PeLe is used?**

90- I totally agree	8- I agree	2 - Neutral	1- I slightly disagree	Sorry I feel asleep
---------------------	------------	-------------	------------------------	---------------------

**3) What voting device did you use?**

60 - i Pod provided by teacher	0 - Private i Pod	40- Private cell phone	Other device
--------------------------------	-------------------	------------------------	--------------

**4) It was easy to use the voting device:**

65 - I totally agree	20- I agree	10 - Neutral	5- I slightly disagree	I totally disagree
----------------------	-------------	--------------	------------------------	--------------------

**5) How was the introduction of the PeLe, before you used it during the demonstration?**

80 - Excellent    10 - Very good    8 - Satisfactory    2- Slightly Insufficient

**6) Are you conformable with the log-in system?**

55 - Very comfortable	25 - Slightly comfortable	15 Comfortable	5- Slightly uncomfortable	Very uncomfortable
-----------------------	---------------------------	----------------	---------------------------	--------------------

**7) Are you comfortable with the PeLe system interface?**

68 - Very comfortable	15- Slightly comfortable	10- Comfortable	7 - Slightly uncomfortable	Very uncomfortable
-----------------------	--------------------------	-----------------	----------------------------	--------------------

**8) Are you after this training session comfortable with using the PeLe system?**

70 - Very comfortable	25 - Slightly comfortable	5- Comfortable	Slightly uncomfortable	Very uncomfortable
-----------------------	---------------------------	----------------	------------------------	--------------------

**9) To what extent do you think the system, as it has been used, may integrate as a natural part of an exam?**

30 - Excellent    35- Very good    25 - Satisfactory    10- Not very good    Bad

**10) I prefer to revote the questions that were most problematic for the class?**

80- I totally agree	10 - I agree	5- Neutral	5- I slightly disagree	Sorry I feel asleep
---------------------	--------------	------------	------------------------	---------------------

**11) By using PeLe I had a chance to learn from the mistakes:**

90 - I totally	5- I agree	5 - Neutral	I slightly	Sorry I feel
----------------	------------	-------------	------------	--------------

agree

disagree

asleep

**12) By using PeLe I had a chance to learn from peers:**

85 - I totally  
agree

12- I agree

3 - Neutral

I slightly  
disagree

Sorry I feel  
asleep



**Conclusion from the tests**

As a conclusion, by interpreting questionnaires during pilot testing in number of locations and we think that:

1. The impression for using Peer Learning Assessment Software (PeLe) is very positive in any level of MT or other areas.
2. The students become fun to attend testing where this kind of evaluation running.
3. The students have used devices distributed by the teacher, own mobile phones or other devices to have repetitive use of the method till they get experience to use any of the mobile devices.
4. The students feel comfortable to use the voting device because the information and communication technology is very possessed by the young generation.
5. In the introductory phase of PeLe teachers have read the user manual to understand how to use the system, and how to log at the system, than have projected the Online Instructional videos that demonstrate how to:
6. a) *Create teacher and student accounts on the PeLe assessment system (3 minutes long);*

- b) Log on to the assessment services from students' mobile devices (4 minutes long)
- c) Use the PeLe (*Peer Learning*) Assessment Services for Smartphone's, Pad's, iPod, PC and Mac (the video contains 13 sections and is 11,5 minutes long). - These videos are available on the webpage of the project at <http://www.histproject.no/node/197>.

7. The log into the system is mostly comfortable, but for some participants feel Slightly uncomfortable due to the different type of browsers installed on the devices and the fact that PeLe cannot be accessed on each type of browser.
8. The PeLe interface is comfortable for most of the students.
9. In general students accept to use the system as part of the exam, but there are also cases when they feel confused. We consider it is necessary to use the system at least 2-3 times till final exams until most of the students become comfortable with PeLe. Some of the students feel that have to fight with technology, which is another stress augmented to the stress of the exam.
10. The system offer students the chance to revote problematic questions but also to learn from own mistakes and from peers.
11. It is important that the teacher to explain what is the correct alternatives of the questions, which is the cognitive part of the methodology, helping students to learn the course curriculum.
12. Students feel engaged and activated during evaluation by using PeLe and most of them would like to use in classes;
13. The middle of the answers distribution is translated to the positive situations reveled by the questions, so the acceptance of the questionnaire is positive by the audience.
14. We have challenged with some problems that in some situation may become drawbacks of the evaluation system. Time spent to prepare relevant questions to the course is consuming resources. It depends also on the nature of the taught subject. The evaluation system is most suitable for descriptive sciences, and less for exact sciences. The teacher has to appreciate what kind of questions to ask: factual or conceptual questions. He has to read up on existing articles on multiple-choice questions. We appreciate that in general is preferable to have multiple-choice questions.

### **Kérdőív a PeLe rendszer működéséhez!**

**1) Az első benyomásom a Peer Learning Assessment Software (PeLe) használatáról:**

Kiváló      Nagyon jó      Elfogadható      Nem jó      Rossz

**2) Jó olyan képzésben részt venni ahol a PeLe rendszert használják?**

Igen nagyon	Valószínű	talán	Nem hiszem	nem
		figyeltem		

**3) Milyen szavazó rendszert használtál?**

MHTE iPod      Saját iPod      Okos telefont      Más eszközt

**4) Egyszerű volt használni a szavazó rendszert:**

Teljesen egyet értek egyet értek természetes volt nem volt jó teljesen rossz volt

**5) Milyen volt a PeLe rendszer bemutatása mielőtt használtad volna a képzésen vagy teszten?**

Kiváló volt Jó volt Elfogadható gyenge Rossz volt

**6) Jónak találd a belépési felületet?**

Igen nagyon Valószínű talán Nem hiszem nem figyeltem

**7) Kezelhetőnek tartod a PeLe rendszer felhasználói felületét?**

Kiváló volt Jó volt Elfogadható gyenge Rossz volt

**8) A képzés vagy teszt után kényelmesen tudod használni a PeLe rendszert?**

Igen nagyon Valószínű talán Nem hiszem nem figyeltem

**9) Mi a vélemyényed a rendszer használata után, lehetne használni vizsgáztatás közben is éles helyzetben?**

Kiváló volt Jó volt Elfogadható nem használható Rossz lenne

**10) Jónak tartod az újbóli válaszadási lehetőséget a hibásan megválaszolt kérdésekben?**

## **8. Summary of evaluation experiences**

Internal, external evaluation and evaluation from end users was completed as planned in all the five countries involved in the project.

QA system surveillance was executed as planed. Project timeline was all the time ahead the planed. No complains was reported.

Internal audit by the partners did find that work with experienced project leader as John Birger Stav is key of fluid and succesfull project.

Users of the project outputs were very satisfied with improvement of the courses and usability of the system for examination in all the partner countries.

Summary of suggestions found by the evaluation process in all the project member countries:

In the very early phase of the project we have got near hundred useful suggestions from testing in Norway. Development team did consider all of them and use most of them for programming the PeLe system.

In next phase we have tested the system in different phase of optimization in four countries and the outputs were: a majority of students agreed that PeLe was a good way of conducting multichoice testing. A clear majority of students thought that the PeLe software did not take to much time from the ordinary lectures and clearly saw benefits from the system. From the interviews we conducted with the material testers in we got impression that multichoice questions and PeLe software was well suited for the subject of Material testing.

The students found the PeLe interface is enough intuitive although they in many cases didn't have any previous experience with student response system. The students also in general thought that it was easy or quite easy to answer the questions with the PeLe software. The material testers were more positive than the students from the history and nursing courses and a explanation for this could be that in nursing we had some questions with many possible answers so that all the answers did not fit into the screen and the students had to scroll down to answer those.

The students thought that it was easy or quite easy to submitt the test. In general the history and nursing students think that it is more easy to submit tests. In general the students were very positive about use of PeLe for grading or certification. The students was satisfied about a quick feedback on what was correct and what was incorrect in the test.

The students have used devices distributed by the teacher, own mobile phones or PC and it is necessary to have repetitive use of the method till they get experience to use any of the devices; The log into the system is mostly comfortable, but for some participants feel slightly uncomfortable due to the different type of browsers installed on the PC from the course room and the fact that PeLe cannot be accessed on each type of browser; The PeLe interface was comfortable for most of the students but can be improved to be more intuitive, because there are situations where students feel uncomfortable;

Students become more familiar with the system after at least one testing; In general students accept to use the system as part of the exam, but there are also cases when they feel confused. We consider it is necessary to use the system at least 2-3 times till final exams until most of the students become comfortable with PeLe. Some of the students feel that have to fight with technology, which is another stress augmented to the stress of the exam; The system offer students the chance to revoete problematic questions but also to learn from own mistakes and from peers;

Time spent to prepare relevant questions to the course is consuming resources. It depends also on the nature of the taught subject. The evaluation system is most suitable for descriptive sciences, and less for exact sciences. The teacher has to appreciate what kind of questions to ask: factual or conceptual questions. He has to read up on existing articles on multiple-choice questions.

There are some browsers that don't run properly the application, and further testing during the exploitation phase will handle this issue. On line applications must have internal back up at least for exams. Not all the teachers allow the use of mobile phone in classes, because it can be a distraction.

Teachers evaluated the PeLe system as user-friendly system, easy to use; they could lead the candidates through the assessment results and give feedback on the results. System and method is fast and cost-efficient.

The total impressions for using Peer Learning Assessment Software (PeLe) were very positive in any level of material testing courses.

Technical results were above planned results.

External evaluator did not find any non-conformities.

## 9. References

1. The Mecca project, online at <http://histproject.no/node/57>
2. Berg, B. L. (2007). *Chapter 5: Focus group Interviewing*. I: Berg, Bruce L. (2007): Qualitative Research Methods for the Social Sciences, Pearson Education Inc. (s. 144-170).
3. Charmaz, K. (2001). Grounded Theory. In: Smith, J. A., Harre, R, Langenhove, L. (eds). *Rethinking methods in psychology*. London: Sage Publications. (s.27-49).
4. Cozby, P. C. (2003). *Methods in Behavioral Research*, 8<sup>th</sup> ed. McGraw-Hill companies 2003.
5. Johannessen, A., Tufte, P. A., og Kristoffersen, L. (2004). *Introduksjon til samfunnsvitenskapelige metoder*. Abstrakt forlag as 2004.
6. Ringdal, K. (2001). *Unity and diversity. Social Science Methodology and quantitative research*. Fagbokforlaget Vigmostad & Bjørke AS 2001.

## 10. Appendix A



### EduMECCA

#### *CHECKLIST for internal partner Evaluation*

Version: 1.0	PROJECT	Date: 2009.05.15
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Item	Topic	Status	Date	Signature
1	Check that all the partners understand the aim of WP1	DOPO	3. 6. 2009	
2	Check that all the partners understand the aim of WP2	- ( ) -	3. 6. 2009	
3	Check that all the partners understand the aim of WP3	- ( ) -	3. 6. 2009	
4	Check that all the partners understand the aim of WP4	- ( ) -	3. 6. 2009	
5	Check that all the partners understand the aim of WP5	- ( ) -	3. 6. 2009	
6	Check that all the partners understand the aim of WP6	- ( ) -	3. 6. 2009	
7	Check that all the partners understand the aim of WP7	- ( ) -	3. 6. 2009	
8	Confirm that the partners understand and are fully conversant with tools and technology and the training requirements of the endusers	- ( ) -	3. 6. 2009	
9	Confirm and check the deadlines with the partners and adjust if necessary	- ( ) -	4. 11. 09	
10	Check that there is a degree of flexibility in the time allowed to produce the work	- ( ) -	4. 11. 09	
11	Confirm with the partners that the tasks set are appropriate for them and make changes to the individual workloads if necessary	- ( ) -	4. 11. 09	
12	Confirm that all partners are undertaking the work required by this WP and that it conforms to the needs of the WP	- ( ) -	4. 11. 09	
13	Confirm that the evaluation strategy is adequate for the WG objectives	- ( ) -	4. 11. 09	
14	Conform that the internal and external evaluation groups are correctly structured	- ( ) -	4. 11. 09	

15	Check that the main outcome, the concept definition of the project fits to the aims of the WP's	Done	6.11.09	
16	Check that outcome and results are well documented	-/-	7.9.10	
17	Confirm accuracy of information and sources as well as possible	-/-	7.9.10	
18	Install a feedback process to improve the quality of outcome and results	-/-	7.9.10	
19	Check that interim and final reports are correctly structured	Completed	30.11.10	